University of Zurich[UZH]

Cooperation between advantaged and disadvantaged groups toward social change

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SUMMARY

Every day people around the world experience structural inequalities and discrimination based on their national origin, gender, sexual orientation, and/or gender identity.
In response to these group disparities, some members of disadvantaged groups strive for empowerment, whereas others downplay existing inequalities. Similarly, some members of advantaged groups feel guilty about unearned privileges, whereas others perceive them as legitimate and just. Therefore, it is of great importance to shed light onto the processes that promote or hinder support for social change among members of disadvantaged and advantaged groups. Historical trends toward desegregation, immigration, and the rising visibility of sexual and gender minorities enhance contact between groups, which is often presumed to foster social change. An unresolved question is whether this is always the case, or under what conditions social change actually takes place.

The main goal of the present thesis is to understand when members of both disadvantaged and advantaged groups support social change toward greater equality. The first paper seeks to shed light on the divergent reactions to social inequalities among disadvantaged and advantaged groups using a needs-based approach. The second paper provides the floor for the debate on whether social harmony and social change are incompatible goals. Finally, the third paper informs the debate by drawing on a need-based approach.

According to the needs-based model (Nadler & Shnabel, 2015), members of disadvantaged and advantaged groups experience divergent needs in response to group-specific threats. Members of disadvantaged groups are sometimes the target of discrimination, whereas members of advantaged groups are often subjected to stereotypes that portray them as cold and bigoted. The needs-based model postulates that these group-specific threats lead to the need for power among the former, and the need for moral

acceptance among the latter. Satisfaction of these group-specific needs by the respective outgroup, in turn, should promote support for social change among both disadvantaged and advantaged groups. Consequently, both groups should experience divergent reactions in response to social inequalities. Members of disadvantaged groups should experience a heightened need for empowerment, whereas members of advantaged groups should experience a heightened need for acceptance. In addition, the paper investigates whether differences in system justification (the tendency to defend, justify, and bolster aspects of the status quo) moderate experiences of group-specific needs among disadvantaged and advantaged groups.

The second paper informs the debate whether the beneficial effects of intergroup contact might come at the cost of reducing support for social change among members of disadvantaged groups. Positive contact between social groups of divergent social status reduces prejudice and discrimination. However, these beneficial effects have been argued to come at the cost of reducing support for social change toward greater equality. Therefore, the second paper assess whether (and if yes, when) intergroup contact discourages support for social change among members of disadvantaged and advantaged groups.

Finally, the third paper advances our understanding of the specific circumstances under which intergroup contact is associated with support for social change toward greater equality among both groups. In line with the assumptions of the needs-based model, satisfaction of the group-specific needs by the respective outgroup can increase support for social justice among members of both groups. Consequently, empowering intergroup contact rather than accepting contact should encourage support for social change among ethnic minorities and LGBTIQ+ individuals. In a similar vein, accepting intergroup contact should promote support for social justice among advantaged-group members.

Together, the present thesis shows that members of disadvantaged groups (i.e., LGBTIQ+ individuals and women) and advantaged groups (i.e., cis-heterosexuals and men) experience divergent needs in response to group-based disparities. While the former experience a heightened need for empowerment, the latter experience a heightened need for acceptance. However, individual differences in the perception of the group-based disparities moderate these responses, indicating that the divergence of needs postulated by the needs-based model are contingent on perceived illegitimacy. Next, the second article systematically assesses how intergroup contact affects social justice. It reveals an asymmetric effect of intergroup contact on support for social change among diverse disadvantaged and advantaged groups. While intergroup contact is negatively associated with support for social change among ethnic minorities and LGBTIQ+ individuals, it is positively associated with support for social change among ethnic majorities and (cis-)heterosexuals. Finally, the results of the first and second articles are integrated in the third article, which takes on the debate whether intergroup contact might perpetuate existing structural inequalities into consideration. Given that the needs-based model highlights the importance of group-specific needs, intergroup encounters might be a powerful tool to encourage support for social change beyond group lines to the extent that they satisfy group-specific needs.

Overall, the current research provides robust evidence that intergroup encounters, which satisfy the divergent group-specific needs, might unite groups in their struggle for greater social justice. In other words, if interventions or social movements aim to encourage a wide range of behaviors to promote and support social change beyond group divides, it is essential that these intergroup encounters are not just pleasant (with the aim of social harmony) but they should also empower disadvantaged groups (with the aim of social justice).

ZUSAMMENFASSUNG

Weltweit erleben Menschen täglich strukturelle Ungleichheiten und Diskriminierungen aufgrund ihrer Herkunft, ihres Geschlechts, ihrer sexuellen Orientierung und/oder Geschlechtsidentität. Als Reaktion auf diese Ungleichheiten streben einige Mitglieder benachteiligter Gruppen nach Ermächtigung (Empowerment), während andere Individuen existierende Ungleichheiten herunterspielen. Gleichermassen fühlen sich einige Mitglieder privilegierter Gruppen schuldig aufgrund der potentiell unverdienten Privilegien, während andere sie als legitim und gerecht wahrnehmen. Aufgrund dieser divergierenden Reaktionen, ist es von grosser Wichtigkeit besser zu verstehen, wann sich Personen verstärkt für soziale Gerechtigkeit einsetzen und wann nicht. Die Aufhebung der Segregation (z.B. in USA und Südamerika), steigende Immigrationszahlen sowie die stärkere Sichtbarkeit von sexuellen und geschlechtlichen Minderheiten führen zu vermehrtem Kontakt zwischen diversen sozialen Gruppen. Von diesem Intergruppenkontakt wird meist implizit angenommen, dass er den sozialen Wandel begünstigt. Eine ungelöste Frage ist jedoch, ob dies wirklich immer der Fall ist – und falls nicht, unter welchen Umständen Intergruppenkontakt sozialen Wandel tatsächlich begünstigt.

Das Hauptziel der vorliegenden Dissertation ist es folglich, unser Wissen über die Umstände, unter denen sich sowohl Mitglieder von benachteiligten Gruppen (z.B. ethnische Minderheiten, Frauen, sexuelle und geschlechtliche Minderheiten) als auch Mitglieder von privilegierten Gruppen (z.B. ethnische Mehrheiten, Männer, cis-heterosexuelle Personen) sich für soziale Gerechtigkeit engagieren, zu fördern. Der erste Artikel greift auf das Bedürfnisbasierte Modell (needs-based model) von Nadler und Shnabel (2015) zurück, um besser zu verstehen wie Mitglieder von benachteiligten und Mitglieder von privilegierten Gruppen auf soziale Ungleichheiten reagieren. Der zweite Artikel adressiert die geführte Debatte, ob das Erreichen von sozialer Harmonie und sozialer Gerechtigkeit unvereinbare

Ziele sind. Schliesslich testet der dritte Artikel die Annahme, dass Kontaktsituationen, welche die verschiedenen gruppenspezifische Bedürfnisse adressieren, gruppenübergreifendes Engagement für soziale Gerechtigkeit erhöhen könne.

Nach dem Bedürfnisbasierten Modell haben benachteiligte und privilegierte Gruppen unterschiedliche Bedürfnisse: Mitglieder von benachteiligten Gruppen sind häufiger das Ziel von Diskriminierung und streben daher nach Selbstbestimmung und Ermächtigung. Im Gegensatz dazu, werden Mitglieder von privilegierten Gruppen oft stereotyp als kompetent, aber unmoralisch wahrgenommen, was zu einem erhöhten Bedürfnis nach moralischer Akzeptanz führt. Darüber hinaus besagt das Bedürfnisbasierte Modell, dass eine Erfüllung dieser Bedürfnisse durch die jeweilige andere Gruppe dazu führt, dass sich beide Gruppen verstärkt für soziale Gerechtigkeit einsetzen. Es ist folglich anzunehmen, dass beide Gruppen unterschiedlich auf sozialen Ungleichheiten reagieren. Während Mitglieder benachteiligter Gruppen nach Ermächtigung streben, sollten Mitglieder privilegierter Gruppen nach sozialer Akzeptanz streben. Darüber hinaus untersucht der erste Artikel, ob Unterschiede in der Wahrnehmung bestehender Ungleichheiten als legitim oder illegitim, die gruppenspezifischen Reaktionen beeinflussen.

Der zweite Artikel trägt zur Debatte bei, ob der Kontakt zwischen Gruppen dazu führt, dass bestehende strukturelle Ungleichheiten manifestiert werden. Positiver Kontakt zwischen sozialen Gruppen von unterschiedlichem Status kann Vorurteile und Diskriminierung reduzieren. Jedoch legen mehr und mehr Forschungsergebnisse nahe, dass dies zu Lasten der Wahrnehmung von bestehenden Ungleichheiten geht und folglich zu einem reduzierten Engagement für soziale Gerechtigkeit führt. Der zweite Artikel untersucht daher systematisch, ob, und falls ja, wann Intergruppenkontakt zu einem geringeren Engagement für soziale Gerechtigkeit bei Mitgliedern benachteiligter und privilegierter Gruppen führt.

Der dritte Artikel fördert ein vertieftes Verständnis von den genauen Umständen, unter denen Intergruppenkontakt zu einem stärkten Engagement für soziale Gerechtigkeit führt. Nach dem Bedürfnisbasierten Modell kann eine Erfüllung gruppenspezifischer Bedürfnisse durch die jeweilige andere Gruppe dazu führen, dass sich beide Gruppen verstärkt für höhere soziale Gerechtigkeit einsetzen. Folglich sollte Intergruppenkontakt, der als ermächtigend wahrgenommen wird (im Gegensatz zu Intergruppenkontakt der als akzeptierend wahrgenommen wird), dazu führen, dass sich ethnische Minderheiten und LGBTIQ+ (d.h., lesbische, schwule, bisexuelle, trans*, intersex, queere) Personen verstärkt für ihre Rechte und somit soziale Gerechtigkeit einsetzen. Ebenso sollte Intergruppenkontakt, der von ethnischen Mehrheiten und cis-heterosexuellen Personen als akzeptierend wahrgenommen wird, das Engagement für soziale Gerechtigkeit bei Mitliedern privilegierter Gruppen erhöhen.

Die Resultate der vorliegenden Dissertation legen nahe, dass Mitglieder von statustiefen Gruppen (d.h. LGBTIQ+ Individuen und Frauen*) und Mitglieder von statushohen Gruppen (d.h. cis-heterosexuelle Personen und Männer*) unterschiedliche Bedürfnisse in Reaktion auf soziale Ungleichheiten zeigen. Während Erstere ein verstärktes Bedürfnis nach Ermächtigung erleben, erleben Letztere ein verstärktes Bedürfnis nach sozialer Akzeptanz. Individuelle Unterschiede in der Wahrnehmung der sozialen Ungleichheiten moderieren jedoch die Reaktionen auf soziale Ungleichheiten. Dieser Befund legt nahe, dass die durch das Bedürfnisbasierte Modell postulierte Asymmetrie der Bedürfnisse nur dann auftritt, wenn Individuen die sozialen Ungleichheiten als illegitim wahrnehmen. Des Weiteren hat die vorliegende Forschungsarbeit systematisch erfasst, wie Kontakt zwischen Mitgliedern sozialer Gruppen das Engagement für soziale Gerechtigkeit beeinflusst. Die Forschungsarbeit legt hier ebenfalls einen asymmetrischen Effekt nahe. Während Intergruppenkontakt sich negativ auf das Engagement von ethnischen Minderheiten

und LGBTIQ+ Personen auswirkt, wirkt er sich positiv auf das Engagement von ethnischen Mehrheiten und cis-heterosexuellen Personen aus. Die Erkenntnisse der ersten beiden Artikel werden im dritten Artikel integriert. Dieser leistet einen wichtigen Beitrag zu der Debatte, ob Intergruppenkontakt soziale Ungerechtigkeiten manifestiert. Das bedürfnisorientierte Modell hebt die Wichtigkeit der Berücksichtigung gruppenspezifischer Bedürfnisse hervor. Werden diese während der Kontaktsituation adressiert, dann kann Kontakt zwischen diversen sozialen Gruppen zum sozialen Wandel beitragen.

Zusammenfassend gelangt die vorliegende Dissertation zu der fundierten Erkenntnis, dass Kontaktsituationen, welche die verschiedenen gruppenspezifischen Bedürfnisse adressieren, soziale Gruppen in dem Streben nach grösserer sozialer Gerechtigkeit vereinen können. Mit anderen Worten, wenn Interventionen oder soziale Bewegungen eine Vielzahl von Massnahmen zur Unterstützung von sozialem Wandel mobilisieren wollen, dann scheint es essentiell zu sein, dass Intergruppenkontakt nicht nur als angenehm erlebt wird (mit dem Ziel soziale Harmonie herzustellen), sondern auch zur Ermächtigung benachteiligter Gruppe beiträgt (mit dem Ziel sozialen Wandel zu fördern).

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‘The gladdest moment in human life is a departure into unknown lands.’ – Sir Richard Burton

Undertaking this PhD has been a departure into unknown land, which turned into an incredible journey with various facets, invaluable experiences, but also challenges that had to be overcome. I am certain that I have seized every opportunity that this journey had to offer. I had the honor to not only work with my great team in Zurich, but also to collaborate with 43 amazing scholars living in a total of 23 countries. While I conducted much of my research at my ‘home’ base in Zurich, I particularly valued the opportunities to follow the inner travel bug in me. I enjoyed attending international conferences, building a large international network of like-minded individuals, and working in the labs of my collaborators in Chile, Canada, and the United States. It is therefore obvious that I followed my tradition to write the last lines of my thesis on the road, which this time lead me to Australia and to my new lab in Seattle.

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Chapter 1

Introduction and Outline

‘Striving for social justice is the most valuable thing to do in life.’

—Albert Einstein

People around the world face discrimination and structural inequalities based on their origin, their gender (identity), and their sexual orientation (ILGA & Mendos, 2019; United Nations Women, 2018, United Nations DESA, 2016). To challenge these group disparities people are mobilizing for social change toward greater equality. For example, the Black Lives Matter movement has drawn thousands of Black people, as well as White allies, to the streets demanding racial justice. Similarly, women and their allies marched in the United States and many cities around the world to demand progressive policies, greater inclusiveness, and representativeness of all people. In addition, large-scale demonstrations by the LGBTIQ+[1] movement - supported by cis-heterosexual[2] allies - have paved the way for growing legal equality in many Western countries. Importantly, all of these movements have not only recruited members of the disadvantaged groups (e.g., ethnic minorities, women, or LGBTIQ+ individuals), but also recruited members of advantaged groups (e.g., ethnic majorities, men, or cis-heterosexuals).

Despite the fact that many successful movements mobilized not only members of disadvantaged but also of advantaged groups, a large body of research on support for social change (e.g., collective action) has primarily focused on disadvantaged groups (van Zomeren, Postmes, & Spears, 2008). Hence, little is known about when advantaged groups, in addition to disadvantaged groups, strive for social change toward greater equality between social groups. This unilateral perspective is particularly problematic because social change does not happen in a social vacuum, but needs support of all groups involved. A flux in global migration (United Nations DESA, 2017), an increased participation of women in the work force as well as politics (Ortiz-Ospina & Tzvetkova, 2017), and rising visibility of sexual and

[1] The term LGBTIQ+ denotes individuals identifying as lesbian, gay, bisexual, transgender, intersex, queer, or other sexual and gender minorities. The LGBTIQ+ community has faced, and continues to face, direct discrimination from cis-heterosexuals (Herek & McLemore, 2013) and structural disadvantage (e.g., exclusion for adoption; ILGA & Mendos, 2019).

[2] The term cis-heterosexuals denotes heterosexual individuals whose gender identity corresponds to their assigned sex.

gender minorities (Burgess, 2017) brings people from diverse social groups into contact. While both members of disadvantaged and advantaged groups react to existing group disparities, their reactions might be asymmetric. Disadvantaged-group members might mobilize for social change if they perceive group disparities as illegitimate and unstable. In contrast, advantaged-group members might not be aware of existing group disparities or perceive them as legitimate and consequently defend the status quo and their existing privileges. These actions of advantaged-group members, in turn, should directly affect the experiences and strategies of disadvantaged-group members. This dynamic interplay makes it essential to consider both disadvantaged and advantaged groups when studying support for social change.

The goal of the present thesis is to provide a comprehensive understanding of how members of diverse disadvantaged and advantaged groups cooperate to achieve social change toward greater equality. The thesis is structured around two lines of work, namely outcomes of social inequalities and predictors of social change to tackle existing inequalities that I pursued; I then integrate both lines into one cohesive model (see Table 1 for an overview). Article 1 (Hässler, Shnabel, Ullrich, Arditti-Vogel, & SimanTov-Nachlieli, 2019) of this thesis looks at responses to social inequalities from both members of disadvantaged and advantaged groups in the context of (i) sexual orientation/gender identity and (ii) gender. Drawing on the needs-based model, we investigated whether members of both disadvantaged and advantaged groups experience distinct group-specific needs to the extent that they perceive group-disparities as unjust. Article 2 (Hässler, Ullrich, Bernardino, Shnabel, Valdenegro, Van Laar ... & Ugarte, 2019) takes into consideration that social groups may come into frequent contact with each other. Some scholars have argued that the beneficial effects of intergroup contact (reducing prejudice and fostering social harmony) might come at the price of reducing support for social change. Yet, previous research has not systematically

tested this assumption. Using the largest and most heterogenous dataset in the intergroup contact literature, we take on the debate whether social harmony and social change are incompatible into perspective. We assess whether intergroup contact negatively affects support for social change among disadvantaged and advantaged groups in the ethnic and LGBTIQ+ context around the world. Finally, using the same international sample, Article 3 (Hässler, Ullrich, Bernardino, Valdenegro, Shnabel, Van Laar ... & Pistella, 2019) creates a bridge between Article 1 and 2 by looking at how group-specific need satisfaction during intergroup contact affects support for social change in the ethnic and LGBTIQ+ context.

Table 1
Summary of Studies Organized by Article

Article	Studies	N	Sample	Context	Main Variables
Hässler, Shnabel, Ullrich, Arditti-Vogel, & SimanTov-Nachlieli (2019)	Study 1a	253	Cis-heterosexuals	Advantaged- and disadvantaged group members in Switzerland/Germany: LGBTIQ+ context	1. System justification 2. Need for power 3. Need for moral essence 4. Need to restore moral image
	Study 1b	422	LGBTIQ+ individuals		
	Study 2a	83	Men	Advantaged- and disadvantaged group members in Israel: gender context	
	Study 2b	61	Women		
Hässler, Ullrich, Bernardino, Shnabel, Van Laar, Valdenegro,... & Ugarte (2019)	Study 1a	3,216	Ethnic majorities	Advantaged-group members in multiple countries: ethnic context	1. Intergroup contact 2. Support for social change
	Study 1b	4,898	Cis-heterosexuals	Advantaged-group members in multiple countries: LGBTIQ+ context	
	Study 1c	1,000	Ethnic minorities	Disadvantaged-group members in multiple countries: ethnic context	
	Study 1d	3,883	LGBTIQ+ individuals	Disadvantaged-group members in multiple countries: LGBTIQ+ context	
Hässler, Ullrich, Bernardino, Valdenegro, Shnabel, Van Laar ... & Pistella (in preparation)	Study 1a	689	Ethnic minorities	Disadvantaged-group members in multiple countries: ethnic context	1. Intergroup contact 2. Group-specific need satisfaction 3. Perceived illegitimacy 4. Support for social change
	Study 1b	3,382	LGBTIQ+ individuals	Disadvantaged-group members in multiple countries: LGBTIQ+ context	
	Study 1c	2,937	Ethnic majorities	Advantaged-group members in multiple countries: ethnic context	
	Study 1d	4,203	Cis-heterosexuals	Advantaged-group members in multiple countries: LGBTIQ+ context	

Chapter 2

Overview of the Present Research

‘When the winds of change blow, some people build walls and others build windmills.’

— Chinese proverb

This chapter outlines the objectives of the present thesis and gives an overview of the conducted research and the main results of the three self-contained research articles. First, the needs-based model and its boundary conditions are introduced to better understand how both members of disadvantaged and advantaged groups react to inequalities (Article 1, see Chapter 3). Next, the concepts of intergroup contact and support for social change are introduced and discussed in order to provide the floor for the debate on whether social harmony and social change are incompatible goals (Article 2, see Chapter 4). Finally, drawing on the needs-based model, we offer a new route for intergroup contact to reach both social harmony and social change (Article 3, see Chapter 5).

Article 1: How Do Members of Disadvantaged and Advantaged Groups React to Social Inequalities?

The first stream of work looks at advantaged and disadvantaged groups' responses to social inequalities from a needs-based perspective. The needs-based model of reconciliation (Shnabel & Nadler, 2008; Nadler & Shnabel, 2015) was originally developed to account for dynamics between victims and perpetrators following interpersonal offenses. The model postulates that interpersonal offenses pose an asymmetrical identity threat to victims and perpetrators. While victims suffer from a loss of power and control, perpetrators suffer from violating their own moral principles. These divergent threats result in the need to restore power among victims and the need to restore moral acceptance among perpetrators. The model further suggests that satisfaction of these needs would increase the likelihood that victims and perpetrators reconcile.

The needs-based model can also be applied to intergroup contexts characterized by open conflict as well as structural inequalities. In contexts of structural inequalities and power differences the role of disadvantaged groups corresponds to the role of victims, whereas the role of advantaged groups corresponds to the role of perpetrators. While

members of disadvantaged groups are sometimes the target of discrimination and are often stereotyped as incompetent (Fiske, Cuddy, & Glick, 2007), advantaged-group members often benefit from unearned advantages and are stereotyped as cold and immoral (Fiske et al., 2007). According to the needs-based model, these distinct identity threats should express themselves in group-specific needs, namely the need for empowerment among disadvantaged groups and the need for moral acceptance among advantaged groups. Satisfaction of these group-specific needs might not only increase willingness to reconcile but also promote support for greater equality amongst both groups (Shnabel et al., 2013).

Although the roles of victims and perpetrators are relatively clearly defined in the context of direct violence, there is more ambiguity in contexts characterized by structural inequality. According to system justification theory (Jost & Banaji, 1994), people are motivated to 'defend, justify, and bolster aspects of the status quo including existing social, economic, and political institutions and arrangements' (Jost & van der Toorn, 2012, p. 334) to satisfy basic epistemic, existential, and relational needs. As a result, disadvantaged and advantaged groups might not perceive themselves as victims and perpetrators. Instead, both disadvantaged and advantaged groups might believe that their respective position in society is legitimate and justify the status quo (Jost, Banaji, & Nosek, 2004; Jost, Gaucher, & Stern, 2015; Major, 1994; Tajfel & Turner, 1979). Moreover, members of both disadvantaged and advantaged groups might differ in their tendency to perceive group disparities as just and fair (Leach, Snider, & Iyer, 2002). These individual differences in system justification have been shown to affect moral outrage about group-based disparities (Jost & van der Toorn, 2012; Wakslak, Jost, Tyler, & Chen, 2007).

To illustrate, the current debate on the #MeToo movement has led to a divide between women supporting the #MeToo movement on the one hand and those arguing in favor of traditional sexual morality and downplaying sexual harassment on the other hand. Likewise,

while many men stood up against the sexual harassment experienced by many women, others have argued that the #MeToo debate restricts what they could say/do and reacted in defensive manners. To give another example, the current recommendation of the Swiss parliament to make discrimination based on sexual orientation illegal has been long-awaited by many LGBTIQ+ individuals. The GaySVP (gay members of the Swiss conservative party), however, announced in a press statement that this change of law would restrict the freedom of speech and represents, therefore, a 'mindset-terror' (German: 'Gesinnungsterror'). Similarly, while many cis-heterosexuals supported the proposed change in law, others opposed it referring to freedom of speech or judged LGBTIQ+ individuals as 'immoral'.

These examples demonstrate that the perceptions of illegitimacy might alter responses to group disparities amongst both members of disadvantaged and advantaged groups. Since the perception of illegitimacy is a prerequisite for applying the logic of the needs-based model, the divergence of needs postulated by the needs-based model might be contingent on perceived illegitimacy. In other words, members of both groups might not experience heightened group-specific needs – restoration of power among members of disadvantaged groups and restoration of moral image among advantaged groups – to the degree that they perceive group disparities to be legitimate. Furthermore, the given examples suggest that advantaged groups' need for morality might be more multifaced than originally assumed (see also Knowles, Lowery, Chow, & Unzueta, 2014). Members of advantaged groups scoring low in system justification might be concerned about their moral essence (shame due to ingroup's violation of core moral values) and act genuinely toward the disadvantaged group. In contrast, members of advantaged groups scoring high on system justification might instead be concerned about their moral image (shame due to the damage of ingroup's reputation) and act in a defensive manner.

In line with the reasoning above, the first article (Hässler, Shnabel, Ullrich, Arditti-Vogel, & SimanTov-Nachlieli, 2019) examines how members of disadvantaged and advantaged groups respond to social inequalities based on individual differences in system justification. Study 1 draws on the LGBTIQ+ context in Switzerland and Germany in 2015, where LGBTIQ+ individuals still suffered from legal disadvantages[3] such as denied legal recognition of same-sex marriage, adoption, and assisted procreation. Study 2 draws on the gender context in Israel, in which women still suffer from poverty, gender-based violence, and discrimination in the job market (Tzameret-Kertcher, Herzog, & Chazan, 2016).

In line with assumptions of the needs-based model, LGBTIQ+ individuals and women expressed on average greater need for power in response to information about group-based disparities than cis-heterosexuals and men, which is consistent with the idea that social disadvantages can produce a need to restore the ingroup's power. As expected, system justification was negatively related to need for power among disadvantaged groups, which implies that individual tendency to perceive group-disparities as fair and legitimate undermines the emergence of the group-specific need for empowerment. Consistent with the idea that social privileges can produce a need to restore the ingroup's moral essence (Moscovici & Pérez, 2009), cis-heterosexuals and men expressed on average greater genuine moral concerns (i.e., shame due to the ingroup's violation of core moral values) than disadvantaged-group members in response to information about group-based disparities. However, the level of system justification triggered diverging responses to information about group-based disparities: In line with predictions, system justification was negatively related to genuine moral concerns (i.e., shame due to the ingroup's violation of core moral values),

[3] Germany legalized same-sex marriage along with adoption and assisted procreation in 2017. From 2018 same-sex couples may adopt step children in Switzerland. Same-sex marriage, joint adoption, and assisted procreation are currently still illegal in Switzerland.

but positively to defensive moral motivations (i.e., shame due to the damage of the ingroup's moral reputation).

These results demonstrate the importance of considering divergent psychological needs in response to social inequalities. Furthermore, they emphasize that individual differences in the tendency to perceive group disparities as just and legitimate alter responses to existing inequalities. While the first article assessed responses to social inequalities from both members of disadvantaged and advantaged groups, the next two articles explore under which circumstances individuals support social change toward greater equality. The second article complements the first article by providing an outlook on how intergroup contact affects support for social change toward greater equality among members of disadvantaged and advantaged groups.

Article 2: How Does Intergroup Contact Affect Support for Social Change?

Literature on intergroup contact and such on support for social change have long developed in isolation of each other. While the former has mostly focused on intergroup contact as a powerful tool for prejudice reduction among advantaged groups (Pettigrew & Tropp, 2005; Lemmer & Wagner, 2015), the latter has mostly focused on precursors of disadvantaged groups' support for social change (van Zomeren et al, 2008). Yet, increasing immigration (United Nations DESA, 2017) and raising visibility of sexual and gender minorities (Burgess, 2017) result in increased contact between diverse advantaged and disadvantaged groups. These intergroups dynamics, in turn, should directly affect processes leading to social change. Consequently, it seems essential to integrate both streams of work.

While scholars have long advocated for bringing social groups in positive contact in an effort to foster social harmony (e.g., Allport, 1954; Al Ramiah & Hewstone, 2013), some critical voices have pointed out that the view that increased intergroup contact is inherently 'good' is too simplistic (Dixon, Durrheim, & Tredoux, 2007; Reicher, 2007; Wright, 2001;

Wright, Taylor, & Moghadam, 1990; Wright & Lubensky, 2009). They argued that intergroup contact might promise to reduce prejudice but threatens to undermine disadvantaged groups' perception of inequality and, in turn, discourages support for social change. This so-called 'irony of harmony' effect (Saguy, Tausch, Dovidio, & Pratto, 2009) has been demonstrated in a recent wave of studies (Çakal, Hewstone, Güler, & Heath, 2016; Çakal, Hewstone, Schwär, & Heath, 2011; Dixon et al., 2007; Kamberi, Martinovic, & Verkuyten, 2017; Sengupta & Sibley, 2013; Tausch & Becker, 2013; Tausch, Saguy, & Bryson, 2015; Wright & Lubensky, 2009). This ironic effect poses a dilemma of high practical relevance since desegregation policies and structured intergroup contact interventions aiming to change relationships between groups for the better might unintentionally perpetuate structural inequalities. Pessimistic voices have even argued that 'contact might make for a more civil society, but it maintains an unequal society' (Reicher, 2012, p.43), which implies that reaching social harmony and social justice might be two incompatible goals. The goal of the second stream of work is to provide a nuanced answer to the question: Are creating social harmony via intergroup contact and reaching social justice two incompatible goals?

According to Allport's (1954) contact hypothesis, contact between social groups is effective in reducing prejudice (and, therefore creating social harmony) if members within the contact situation have equal status, work on common goals, work cooperatively, and are supported by authorities. Intergroup contact has been shown to reduce prejudice and foster positive relationships among multiple groups, in various contexts, and even in areas with marked conflict (Pettigrew & Tropp; 2005; Lemmer & Wagner, 2015). Although intergroup contact is successful in promoting positive attitudes among both advantaged and disadvantaged groups, the relationship between intergroup contact and prejudice reduction is smaller for disadvantaged groups compared to advantaged groups (Tropp & Pettigrew, 2005).

Furthermore, while also intergroup encounters which did not including (all) of Allport's optimal conditions – equal status, common goals, cooperation, and authority support – are effective in reducing prejudice, those following the four conditions have significantly stronger effects on prejudice reduction than interventions that do not include (all of) these conditions (Pettigrew & Tropp, 2006). Accordingly, the optimal conditions seem to be rather facilitating than essential factors.

Yet, not only do conditions of contact situation differ, but intergroup contact differs also in its intensity and valence. In general, more intimate intergroup contact reduces prejudice to a larger extent than more superficial forms of intergroup contact (Davies, Tropp, Aron, Pettigrew, & Wright, 2011). In addition, negative intergroup contact fosters prejudice, whereas positive intergroup contact reduces it (Barlow, Paolini, et al., 2012). Research has further distinguished between a cognitive and an affective route underlying the intergroup contact-prejudice link. The affective route seems to be key in reducing prejudice and promoting positive intergroup attitudes. Indeed, major mediators of the intergroup contact-prejudice effect are of affective nature like reduced anxiety and increased empathy (Pettigrew & Tropp, 2008; Pettigrew, Tropp, Wagner, & Christ, 2011). In sum, especially positive and intimate intergroup contact seems to be effective in increasing positive emotions and, in turn, reducing prejudice and fostering social harmony.

While most of the work on support for social change traditionally has focused on the predictors of collective action, most work has not paid much attention to intergroup contact (e.g., van Zomeren et al., 2008). Furthermore, most work applied a rather narrow definition of collective action, which has been defined as the collective aim to improve the ingroup's status and treatment (Wright et al., 1990; Wright, 2010). A popular model of the psychological motivators of collective action is the social identity model of collective action (van Zomeren, et al., 2008), which postulates that identification, perceived illegitimacy of

group disparities (sometimes operationalized as anger), and group efficacy are the three core facilitators that drive collective support for social change (see Wermser, van Zomeren, Pliskin, & Halperin, 2017; Tabri & Conway, 2011; Çakal et al., 2011 for empirical evidence). It integrates assumptions based on the social identity theory, relative deprivation theory, and resource mobilization theory into a coherent framework.

According to social identity theory (Tajfel & Turner, 1979; 1986), people strive to achieve and maintain positive social identities associated with their group memberships. Therefore, identification with and salience of the respective social group play a central role in promoting support for social change to collectively improve the ingroup's status and treatment (Simon and Klandermans, 2001; Wright, Taylor, & Moghaddam, 1990; Wright, 2010). Further, people should strive for social change to the extent that they consider the disparities in a given context as illegitimate and the status quo as unstable.

Individuals within a group, however, widely vary in their responses to objective group disparities. While many members of disadvantaged group might perceive them as illegitimate, others might legitimate and justify objective group disparities and in turn perpetuate rather than challenge existing inequalities (Jost et al., 2004; Major, 1994; Tajfel & Turner, 1979). Relative deprivation theory (Smith, Pettigrew, Pippin, & Bialosiewicz, 2012; Walker & Smith, 2002) distinguishes, therefore, between objective and subjective feelings of inequalities. Objective group disparities alone may not be sufficient for collective action to occur. Instead a subjective sense of inequality seems necessary to encourage individuals to engage in collective action (see also van Zomeren et al., 2008).

However, subjective feelings of injustice alone might not be sufficient to promote collective action. Therefore, it is important to further consider resources available to challenge social injustice. According to resource mobilization theory (e.g., McCarthy & Zald, 1977; Klandermans, 1984), people weigh costs and benefits of collective action and engage

in it when the expected collective benefits outweigh the expected collective costs. Thus, individuals are more likely to engage in collective action if they perceive that their group has the necessary resources to reach the desired change, which makes group efficacy another important motivator of collective action (Mummendey, Kessler, Klink, & Mielke, 1999). In sum, individuals should engage in support for social change to the extent that they identify with their ingroup, consider the disparities in a given context as illegitimate, and consider it realistic that a movement will be successful in achieving change.

Integrating the literature on intergroup contact and support for social change illustrates why social harmony and social justice seem to be two incompatible goals among disadvantaged groups. Especially those forms of intergroup contact that are most efficient in fostering social harmony – namely, positive and intimate intergroup contact – might ironically have the most detrimental effects on disadvantaged groups' motivation to engage in support for social change toward greater equality. Positive intergroup contact should decrease disadvantaged groups' salience of group boundaries (Rosenthal & Crisp, 2006), ingroup identification (see Pettigrew's 'deprovincialization' hypothesis, 1997, 2009), and awareness of group-based inequalities (Saguy et al., 2009). All of these variables are important conditions for social change to take place (for a critical overview see also Wright & Baray, 2012; Wright & Lubensky, 2009). Hence, especially positive and intimate intergroup contact might tackle those processes that motivate disadvantaged groups in their struggle for social justice.

Importantly, members of disadvantaged groups can and do resort to a wide range of behaviors related to support for social change. They might raise awareness about inequalities, sign petitions or support affirmative actions. It is likely that more positive forms of intergroup contact reduce especially costly forms of support (e.g. demonstrations, strikes) for social change (Becker & Tausch, 2017). In contrast, they might have less impact on low cost

collective action (e.g. petitions, voting). Furthermore, disadvantaged groups could try to achieve social change by reaching out to those who are not directly negatively affected by the existing group disparities (Subašić, Reynolds, & Turner, 2008). In other words, members of disadvantaged group might work together with members of advantaged groups to achieve greater social equality.

This aspect has often been overlooked in previous research, even though social change takes place in a broader social context including both disadvantaged and advantaged groups (but see Subašić et al., 2008; Reimer et al., 2017). While it is fundamental that disadvantaged-group members question the status quo and raise awareness of inequalities for social change to take place (Wright & Baray, 2012; Droogendyk, Wright, Lubensky, & Lous, 2016), advantaged groups can and often do exert more power over the intergroup relationship based on their privileged position. Therefore, the action of disadvantaged groups alone might be rarely sufficient in achieving the desired social change. This raises the question when members of advantaged groups are willing to overcome their own group's self-interest and support social change toward greater social justice even at the expense of giving up their own privileges.

Intergroup contact might be one way to promote advantaged groups' support for social change toward greater equality by blurring boundaries between groups (Rosenthal & Crisp, 2006) and creating a sense of shared identity with the disadvantaged group (Gaertner & Dovidio, 2000). When a relevant superordinate identity – such as identification with opinion-based groups (McGarty, Bliuc, Thomas, & Bongiorno, 2009) or politized identification (Simon & Klandermans, 2001; Stürmer & Simon, 2004) – becomes salient, members of advantaged groups are likely to show heightened perception of illegitimacy of group-based disparities and anger about them (Selvanathan, Techakesari, Tropp, & Barlow, 2018), which, in turn, should increase their support of social change toward greater social justice (Iyer &

Leach, 2010; Selvanathan et al., 2018). This should be the case especially for more positive and intimate intergroup contact. Consequently, considering advantaged groups as well adds a new facet to the debate on whether social harmony and social change are incompatible.

In sum, while intergroup contact seems to reduce disadvantaged groups support for social change by decreasing identification and perception of injustice, it might increase support for social change among advantaged groups. The strength of this asymmetrical intergroup contact effect might depend on the types of intergroup contact and support for social change. The asymmetry between disadvantaged and advantaged groups might especially emerge for positive and intimate intergroup contact.

In line with the reasoning above, the second article (Hässler, Ullrich, Bernardino, Shnabel, Valdenegro, Van Laar ... & Ugarte, 2019) examines how intergroup contact affects support for social change toward greater equality among disadvantaged and advantaged groups. This article is based on research conduct as part of the Zurich Intergroup Project (ZIP) involving 43 researchers from around the world to collect a large and heterogeneous dataset (N = 12,997 individuals from 69 societies). Furthermore, we included both contexts of ethnicity[4] and sexual orientation/gender identity to test for the generalizability of the results. We expected that intergroup contact would be associated with weaker support for social change toward equality among members of disadvantaged groups (ethnic and sexual/gender minorities) but stronger support for social change among members of advantaged groups (ethnic majorities and cis-heterosexuals).

Beyond testing the general association between intergroup contact and support for social change in a large and heterogenous multinational sample, we also investigated the precise forms, content, and nature of intergroup contact that are most closely associated with

[4] The term ethnic context is used as umbrella term, denoting groups within a country who are structurally disadvantaged or advantaged due to their racial, ethnic, national, tribal, religious, or cultural background.

various forms of support for social change. In the present work, we have incorporated the same measures of intergroup contact (e.g., frequency of contact, outgroup friendship, positive contact, indirect contact) and support for social change (e.g., high cost collective action, low cost collective action, working in solidarity) across all samples and respondents, so that we could test relations between intergroup contact and support for social change using comparable methods and procedures. Moreover, addressing concerns regarding researchers' degrees of freedom and the non-reproducibility of scientific results, we heeded calls for a more transparent and reproducible research process (Nosek et al., 2015). At the core of our preregistered study (see https://osf.io/6hfcu/) is the implementation of specification curve analysis (Simonsohn, Simmons, & Nelson, 2015), a powerful method that allows us to systematically assess the role of methodological heterogeneity in evaluating the strength of the evidence by considering all plausible ways to test a hypothesis. Applying specification curve analysis allowed us to examine which types of intergroup contact predict which kinds of support for social change, and among whom.

Our comprehensive analyses clearly point to asymmetric effects of intergroup contact on support for social change among disadvantaged and advantaged groups. We found support for the preregistered hypotheses that intergroup contact is associated with less support for social change among members of disadvantaged groups (ethnic minorities and LGBTIQ+ individuals) but with stronger support for social change toward equality among members of advantaged groups (ethnic majorities and cis-heterosexuals). Yet, the size and even the direction of the effects varied substantially depending on the measures of intergroup contact and support for social change. Specification curve analysis allowed us to detect systematic patterns to establish a more complete understanding of the association between intergroup contact and support for social change. Especially those forms of intergroup contact (positive and intimate contact) that are known to have the strongest effects on prejudice reduction

dampen disadvantaged-group members' support for social change but encourage advantaged-group members' support for social change. Importantly, one form of support for change, willingness to work in solidarity to promote social equality, was positively associated with intergroup contact amongst both disadvantaged- and advantaged-group members.

Consequently, the second article of the present research puts concerns about the potential pitfalls of intergroup contact into perspective. It supports the balanced view that despite its demobilizing effects among disadvantaged groups, intergroup contact might facilitate social change through increased willingness to work in solidarity amongst both groups. This implies one route in which social harmony would not come at the expense of social justice. The final article creates a bridge between Article 1 and Article 2 by looking at how group-specific need satisfaction during intergroup contact affects support for social change.

Article 3: Under Which Circumstances Is Intergroup Contact Associated with Support for Social Change Toward Greater Equality?

Article 2 found asymmetric effects of intergroup contact on support for social change (positive for advantaged groups, negative for disadvantaged groups). In Article 3, we build on our previous results to better understand how intergroup encounters must be structured to encourage support for social change among disadvantaged groups as well. Integrating a needs-based approach allows us to give a systematic and nuanced answer to van Zomeren's (2019) question whether intergroup contact and support for social change are a 'match made in hell, or in heaven'. According to the needs-based model (Nadler & Shnabel, 2015) social groups experience divergent needs due to their different status in society. Disadvantaged groups experience a threat to their identity as a powerful agent, resulting in a heightened need for power, whereas advantaged groups experience a threat to their morality, resulting a heightened need for moral acceptance.

Satisfaction of these needs might be central to promote support for social change. Intergroup contact, however, might not always satisfy these group-specific needs. Consequently, drawing on the needs-based model could provide us with a better understanding of the conditions under which the match between intergroup contact and support for social change is 'made in hell or in heaven'.

Among members of advantaged groups positive and intimate intergroup contact should positively affect predictors of support for social change such as a sense of shared identity, awareness of structural inequalities, and anger about injustices. Moreover, it is likely that positive and intimate intergroup contact satisfies advantaged-group members' need for moral acceptance. Therefore, 'accepting' contact should promote advantaged-group members' willingness for intergroup cooperation (Shnabel & Ullrich, 2013). Thus, intergroup contact in general and accepting contact in particular should encourage advantaged groups' support for social change.

In contrast, among disadvantaged groups positive and intimate intergroup contact is likely to negatively affect predictors of support for social change such as ingroup identification, awareness of structural inequalities, and anger about injustices (Carter et al., 2019; Dixon et al., 2007; Saguy et al., 2009; Van Zomeren, 2019). Not surprisingly, it should therefore undermine support for social change among members of disadvantaged groups (Saguy et al., 2009). Moreover, it is plausible that positive and intimate intergroup contact does not necessary satisfy disadvantaged-group members' need for empowerment. 'Empowering' contact, however, might satisfy disadvantaged groups' heightened need for empowerment, increase their collective efficacy, and, in turn, increase their support for social change. Thus, it might buffer against the otherwise emerging detrimental effect of intergroup contact on support for social change among disadvantaged groups.

Taken together, intergroup encounters might promote social harmony and support for social change beyond group lines to the extent that they satisfy the group-specific needs of both groups. However, in line with previous reasoning, both members of disadvantaged and of advantaged groups should experience threats to their social identity only to the extent that they perceive the group disparities to be illegitimate (Shnabel & Ullrich, 2013). Moreover, individuals should differ in their perception of the illegitimacy of group-based disparities (Leach et al., 2002). Therefore, individual differences in perceived illegitimacy seems to be a crucial boundary condition.

In sum, positive and intimate intergroup contact seems to satisfy the group-specific need among advantaged groups, but seems to fail to do so among disadvantaged groups. Accordingly, 'empowering' intergroup contact could be the key to strengthen disadvantaged groups' support for social change. At the same time, 'empowering' intergroup contact should also decrease prejudice and tensions between groups and, therefore, be conductive to social harmony. Yet, an important boundary condition is the perception of illegitimacy from both members of advantaged and disadvantaged groups.

In line with the reasoning above, the third article (Hässler, Ullrich, Bernardino, Valdenegro, Shnabel, Van Laar ... & Pistella, 2019) seeks to provide evidence under which circumstances intergroup encounters might be a match in heaven (rather than in hell). Complementing the previous analyses with measures of need-satisfaction and perceived illegitimacy, the main goal of the final article was to assess whether satisfaction of group-specific need (i.e., need for empowerment for members of disadvantaged groups and need for acceptance for members of advantaged groups) could promote support for social change beyond group lines.

We expected that the more intergroup contact satisfies group-specific needs, the more members of both groups support social change. We also included individual differences in

perceived illegitimacy to account for the fact that the divergence of needs postulated by the needs-based model are contingent on perceived illegitimacy. Finally, we expected intergroup contact, group-specific needs satisfaction, and perceived illegitimacy to interact (see Figure 1). We tested these assumptions in the same comprehensive multinational dataset[5] as above. Applying specification curve allowed us once again to test for both the robustness of the postulated effects and systematic exceptions.

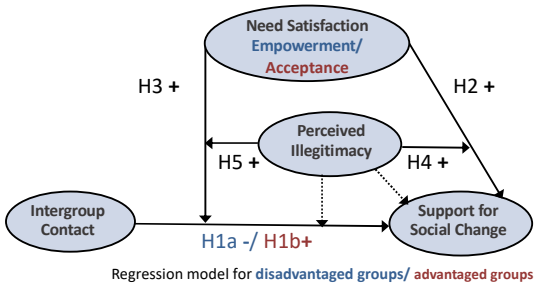

Figure 1. Overview of the regression model underlying all a priori hypotheses.

Adding on previous analyses, the current work found that satisfaction of group-specific needs (i.e., need for empowerment for members of disadvantaged groups and need for acceptance for members of advantaged groups) was positively associated with support for social change amongst both groups. However, specification curve analysis allowed us to detect one systematic exception to the otherwise encouraging effect of group-specific need satisfaction: raising ingroup awareness. Contrary to our assumptions, we found weak evidence for the two-way interaction between need satisfaction and perceived illegitimacy, while we found that the interaction between intergroup contact and need satisfaction is dependent on the perceived illegitimacy (three-way interaction). One explanation for this

[5] There are two important differences between the sample used in Article 2 and the sample used for Article 3. In Article 3, (i) we included only samples with at least 100 usable participants following our preregistration and (ii) since need satisfaction was measured during intergroup contact, we had to exclude participants who reported not having any intergroup contact. Therefore, we ended up with 62 convenience samples, including 11,211 participants from 23 countries.

finding could be that the mean levels of perceived illegitimacy were so high among all four populations of interest (see Table S24 for disadvantaged groups and Table S25 for advantaged groups).

Finally, we also aimed to understand whether it is essential that intergroup encounters satisfy the group-specific need for empowerment to encourage support for social change or whether any kind of need satisfaction is positively associated with support for social change. Therefore, we ran an exploratory specification curve analysis for satisfaction of the non-group-specific need for acceptance. This additional follow-up analyses revealed that satisfaction of the non-group-specific need (i.e., need for acceptance for members of disadvantaged groups and need for empowerment for members of advantaged groups) was negatively related to support for social change among disadvantaged groups, but positively among advantaged groups. This suggests that both accepting and empowering intergroup contact have the potential to mobilize advantaged group members' support of social change toward greater equality. In contrast, only empowering contact has the potential to buffer against the otherwise emerging 'irony of harmony' effect among disadvantaged groups.

Chapter 3

Article 1

How Do Members of Disadvantaged and Advantaged Groups React to Social Inequalities?

Article 1

Individual differences in system justification predict power and morality-related needs in advantaged and disadvantaged groups in response to group disparity.

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Abstract

Guided by the needs-based model, we explored how individual differences in system justification predict group-members' needs in response to information about group-based disparities. Across two studies (N=819), we found that among disadvantaged-group members (LGBTIQ+ individuals/women) system justification was negatively related to need for power. Among advantaged-group members ([cis-]heterosexuals/men), system justification was negatively related to motivation to restore their ingroup's moral essence (i.e., moral shame and wish that the ingroup would act more morally) but positively related to motivation to restore their ingroup's moral image (i.e., need for positive moral image and expectation that the outgroup should acknowledge the ingroup's morality). These results theoretically extend the needs-based model by offering a more nuanced picture of morality-related needs. Further, they underline the importance of considering individual differences in system justification for understanding advantaged- and disadvantaged-group members' responses to social inequality.

Advantaged- and disadvantaged-group members experience divergent psychological needs (Shnabel & Ullrich, 2013). To illustrate, women and LGBTIQ+[6] individuals fought similar fights against male dominance and heteronormativity[7] (Gebhardt, 2016; Hagai & Crosby, 2016; Whittier, 2004), pointing to a common need for empowerment. Likewise, the influence of these social movements on society means that at least some men and (cis-)heterosexuals[8] experience the morally-based need to act for greater social equality.

Besides these differential needs, however, both the advantaged and the disadvantaged are motivated to justify the existing social system. According to system justification theory (Jost & Banaji, 1994), the perception of the social system as legitimate satisfies basic epistemic, existential, and relational needs. Therefore, people might be motivated "to defend, justify, and bolster aspects of the status quo including existing social, economic, and political institutions and arrangements" (Jost & van der Toorn, 2012, p. 334).

The goal of the present research, consisting of two studies, was to examine how this motivation to justify the system, which varies across individuals, relates to advantaged- and disadvantaged-group members' experience of needs for restoration of power and moral identity when thinking about group-based disparities. We will now discuss the needs-based model (Nadler & Shnabel, 2015) and system justification theory (Jost & Banaji, 1994) - the theoretical perspectives on which we based our predictions.

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[6] LGBTIQ+ = Lesbian, gay, bisexual, transgender, intersexual, and questioning people. Although sexual orientation and gender identity/expression are distinct, for the sake of conceptual clarity and brevity we included transgender and intersex people with a heterosexual orientation in the LGBTIQ+ group. Thus, the heterosexual group in our study included only heterosexual participants whose gender corresponds to their assigned sex (cis-heterosexuals).

[7] Heteronormativity refers to the dominance of heterosexuality in society (Herz & Johansson, 2015), and can be understood as "the mundane, everyday ways that heterosexuality is privileged and taken for granted as normal and natural" (Martin, 2009, p. 190); e.g., the term "boyfriend jeans".

[8] Cisgender is a term for people whose gender identity matches the sex that they were assigned at birth. It is the opposite of the term transgender. Transgender people have a gender identity/expression that differs from their assigned sex.

The Needs-Based Model and Illegitimacy

The needs-based model was developed to explain the dynamics between groups involved in conflicts characterized by direct violence (e.g., massacres) and in which the roles of "victims" and "perpetrators" are relatively consensual. For example, when referring to the Holocaust, Jews experienced threat to their sense of power, resulting in a heightened need for empowerment, whereas Germans experienced a threat to their morality, resulting in a heightened need for moral acceptance (Shnabel, Nadler, Ullrich, Dovidio, & Carmi, 2009). Yet, the model's logic can also be applied to contexts characterized by structural inequality, suggesting that groups within a given society often face distinct threats to their identity. Disadvantaged-group members, who are sometimes the target of subjugation and discrimination and are often stereotyped as passive and incompetent (Fiske, Cuddy, & Glick, 2007), might experience threat to their identity as agentic social actors. By contrast, advantaged-group members are often blamed for discriminating against the disadvantaged groups (i.e., "stigma reversal"; Killian, 1985) and subjected to stereotypes that portray them as cold and bigoted (Fiske et al., 2007). Advantaged-group members might, therefore, experience threat to their moral identity. These group-specific threats might lead to divergent needs for restoration of morality and power among advantaged- and disadvantaged-group members (respectively).

However, as opposed to contexts of direct violence, contexts characterized by structural inequality are often ambiguous with regard to groups' blame for inequality. Thus, it would be too simplistic to assume that the needs of the advantaged and disadvantaged always correspond to those of perpetrators and victims. Indeed, advantaged-group members are often unaware of their privileges (Pratto & Stewart, 2012) and both the advantaged and the disadvantaged often believe that they deserve their respective positions (Jost, Banaji, & Nosek, 2004; Jost, Gaucher, & Stern, 2015; Major, 1994), implying that they might not

experience heightened needs for restoration of power and moral image.

Indeed, Siem, von Oettingen, Mummendey, and Nadler (2013) found that disadvantaged- and advantaged-group members exhibited such divergent needs only when group-based disparity was perceived as illegitimate. To illustrate, in one study (Siem et al., 2013, Study 1) participants were assigned to one of two competing groups whose task was to solve difficult math problems. While in the legitimate condition both groups were not allowed to use calculators, in the illegitimate condition one group (the advantaged group) was allowed to use calculators whereas the other (the disadvantaged group) was not. The group that solved more problems (the advantaged group in the illegitimate condition; one of the groups in the legitimate condition) then won several rewards. In line with assumptions, advantaged-group members showed a heightened need for moral acceptance as compared to disadvantaged-group members, and disadvantaged-group members exhibited a heightened need for power as compared to advantaged-group members, when group disparity was perceived to be illegitimate (stemming from an unfair discrimination) but not when it was perceived as legitimate (reflecting differential abilities).

Notably, consistent with the social identity perspective (Tajfel & Turner, 1979, 1986), Siem and colleagues' (2013) research conceptualized the legitimacy of group disparity as an consensual characteristic of the social system (see also Jetten et al. 2013). That is, the social system was either legitimate (when the two competing groups had equal conditions) or illegitimate (when one group was given an advantage over the other). Yet, within the same social system, individual group members differ in the extent to which they perceive group-based disparities as legitimate: whereas some group members see group-based disparities as unjust, others minimize or legitimize them (Leach et al, 2002).

System Justification Moderates Power- and Morality-Related Needs

System Justification Theory assumes a general system justification motive, which has been found to reduce moral outrage about group-based disparities, leading both advantaged- (Wakslak, Jost, Tyler, & Chen, 2007) and disadvantaged-group members (Jost & van der Toorn, 2012) to resist change towards equality. System justification theory's distinctive prediction that tendencies to justify the system should be higher among disadvantaged than advantaged groups (status-legitimacy hypothesis) has been criticized for theoretical inconsistence (Owuamalam, Rubin, & Spears, 2018) and was disconfirmed in a recent large-scale analysis (Brandt, 2013). However, this assumption is not critical for our argument that individual differences in system justification predict power and morality needs. Whether or not there are mean differences in system justification between advantaged and disadvantaged groups, in both groups there will be people who strive for change towards equality and others who deny the system's drawbacks (Jost & van der Toorn, 2012).

In addition to the system justification motive, system justification theory assumes, like social identity theory, the existence of a group justification motive; "the tendency to favour members of the ingroup and to disfavor members of other groups with regard to attribution, stereotyping, evaluation, and resource allocation" (Jost, Glaser, Kruglanski, & Sulloway, 2003, p. 366). Whereas system justification and group justification are positively related for advantaged groups, these motives pull in different directions for disadvantaged groups in that the former would lead them to accept and the latter to challenge their inferior position. Assuming that measures of ingroup identification work as a proxy of the group justification motive, readers might reasonably expect our studies to measure both system justification and ingroup identification[9]. However, our goal was not to test predictions of

[9] Interestingly, previous research among victim and perpetrator groups did not find moderation by identification (Shnabel et al., 2009). This may be due to the multifaceted nature of identification. For example, attachment to one's ingroup's predicts greater group-based guilt, whereas glorification predicts less guilt (Roccas, Klar, &

system justification theory or social identity theory per se. Rather, we draw on system justification theory as a bridge between the needs-based model, originally formulated to explain reconciliation between victims and perpetrators, and the applied context of structural inequality. The key bridging assumption is that the psychological needs of disadvantaged and advantaged groups will correspond to the needs identified for victims and perpetrators only to the extent that members of these groups view their relative position as illegitimate and would therefore assign blame to their ingroup or to the outgroup. Thus, predictions of the needs-based model should hold true at low levels of system justification. The same cannot, in general, be said about ingroup identification. Although empirically, identification and system justification should be correlated (positively for the advantaged, negatively for the disadvantaged), their theoretical status is distinct and only system justification allows for a complete mapping of the needs of victims and perpetrators onto disadvantaged and advantaged groups. Thus, for present purposes we only consider system justification as an individual differences predictor of power and morality needs.

We hypothesized that the extent to which disadvantaged- and advantaged-group members justify the system would moderate their experience of divergent psychological needs in response to group-based disparities. As for the disadvantaged group, high system justifiers were expected to exhibit relatively low levels of need for power because empowering their ingroup means changing the status quo that they wish to preserve. In contrast, we expected low system justifiers among the disadvantaged group to experience an enhanced need for power (i.e., wish their ingroup to become more dominant).

Predictions for advantaged-group members were somewhat more complex. The needs-based model originally assumed an undifferentiated need to restore morality among

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Liviatan, 2006), and identification with women as a social category is associated withopposing ideologies for traditional vs. feminist women (Cameron & Lalonde, 2001).

perpetrators. Yet, recent research has revealed a more nuanced picture. Specifically, studies conducted on contexts of direct violence revealed that perpetrators' concerns about the ingroup's moral essence (shame due to the ingroup's violation of core moral values) predicted positive outgroup orientations, whereas image concerns (shame due to the impairment of the ingroup's moral reputation) were associated with defensiveness and negative outgroup orientations (Allpress, Brown, Giner-Sorolla, Deonna, & Teroni, 2014). Applying these insights to contexts of structural inequality, advantaged groups might be concerned about their public image rather than their ingroup's moral essence. Building on this distinction, we theorized that the experienced need for morality should be qualitatively different among low and high system justifiers.

To capture the defensive moral motivation (the wish to protect the ingroup's image) aroused by information about inequality, we measured (1) need for a positive moral image, and (2) expected acknowledgement; namely, a wish that the outgroup would admit that the advantaged group is wrongfully accused for being immoral (Saguy, Chernyak-Hai, Andrighetto, & Bryson, 2013). For the advantaged group, expected acknowledgement reflects a heightened motivation to protect the ingroup's moral image by changing the views of the disadvantaged group about it, i.e., having them acknowledge that they are receiving fair treatment (and hence the system does not need to be changed). We hypothesized that system justification would be positively related to the need to defend the ingroup's moral image, because justifying the system is consistent with legitimizing their ingroup's morality (Jost & van der Toorn, 2012).

To capture the motivation to restore the ingroup's moral essence, we included two measures. The first was group members' feeling of moral shame due to the privileges enjoyed by their ingroup. Moral shame, which implies accepting blameworthiness, reflects a genuine, non-defensive moral concern (Allpress et al., 2014). However, as a self-focused emotion,

moral shame can be dissociated from intentions to benefit the outgroup at the expense of ingroup privileges (Iyer, Schmader, & Lickel, 2007). Therefore, we included an additional facet of a non-defensive moral motivation, namely group members' wish that their ingroup would act more morally toward the outgroup, even at the expense of giving up privileges (SimanTov-Nachlieli, Shnabel, Aydin, & Ullrich, 2017). We hypothesized that system justification should be negatively related to the need to restore the ingroup's *moral essence*. This is because advantaged-group members low in system justification should be readier to accept that their ingroup enjoys privileges, calling the system's fairness into question.

The Present Research

We conducted two studies to examine our hypotheses. Study 1 focused on the relations between LGBTIQ+ individuals and (cis-)heterosexuals in Germany and Switzerland. LGBTIQ+ individuals have a history of discrimination on the part of (cis-)heterosexuals (Herek & McLemore, 2013). Despite some change towards greater equality, LGBTIQ+ individuals in Germany[10] and Switzerland still suffer from structural disadvantages. For instance, registered partners, as compared to married (cis-)heterosexual couples, are discriminated against in terms of citizenship rights as well as adoption and assisted procreation rules. Perhaps the most severe human right violation is forced sterilization[11] as a requirement for gender reassignment in Switzerland (and in 20 other European countries; ECRI, 2014b, 2014a; UN Human Rights Council, 2015). Study 2 focused on the context of gender relations in Israel, in which, as in most of the world's societies, women are disadvantaged compared to men (European Institute for Gender Equality, 2015), having less access to resources in terms of work, money, time, and

[10] The study was conducted in summer 2015 before the bill for legalization of same-sex marriage passed the Bundestag on June 30th, 2017.

[11] The European Court of Human Rights ruled on April 6th, 2017 that the sterilization requirement is an institutionalized violation of human rights.

protection from domestic violence. Data and materials used in the present research can be found at https://osf.io/qgdp4/.

Hypotheses

The following hypotheses sum up our reasoning:

1) Among disadvantaged-group members (LGBTIQ+ individuals/women), we expected need for power to be higher than among advantaged-group members ([cis-]heterosexuals/men). However, need for power should be weaker, the higher their system justification tendencies. With regard to the advantaged group, system justification was not expected to be negatively related to need for power; if anything, this relationship could be positive.
2) We expected the need to restore the group's moral essence (i.e., moral shame, wish to act more morally) to be higher among advantaged-group members than among disadvantaged-group members. However, we expected system justification to be negatively related to this need. In contrast, we had no theoretical grounds to expect a relationship between system justification and the need to restore the group's moral essence among disadvantaged-group members.
3) In general, the need to defend the ingroup's moral image (i.e., expected acknowledgement, need for moral image) should be higher among advantaged than among disadvantaged groups. Yet, especially LGBTIQ+ individuals might have a strong desire to restore their moral image as their behavior is considered morally deviant by parts of society (Herek & McLemore, 2013). Thus, we did not have any prediction regarding the overall group-means. However, we expected system justification to be positively related to the need to defend the ingroup's moral image among advantaged-group members. No relationship was expected for disadvantaged-group members. If anything, the relationship might be reversed (lower system

justification might predict stronger need to defend the disadvantaged ingroup's moral image, because receiving recognition of its morality can serve as the basis for demanding change towards equality).

Study 1: LGBTIQ+ Individuals and (Cis-)Heterosexuals

Method

Participants. Based on a priori power analysis (assuming a small effect for the interaction and a power of 80%), we aimed for recruiting at least 250 cis-heterosexuals and 250 LGBTIQ+ individuals. A total of 675 German-speaking participants from Germany and Switzerland were recruited online (using social networking sites, snowball sampling, and contacting LGBTIQ+ groups) and participated voluntarily.

The sample consisted of 253 (cis-)heterosexuals (heterosexual men/women); *M*age = 29.63, *SD*age = 10.53) and 422 LGBTIQ+ individuals[12] (234 [cis-]homosexuals, 99 [cis-]bisexuals, 89 others, *M*age = 32.33, *SD*age = 12.54) (see Table 1 for details).

Table 2
Sample Composition (Study 1)

Sexual Orientation / Gender	Male	Female	Other
(1) Heterosexual	100	153	2
(2) Bisexual	35	64	4
(3) Homosexual	115	119	8
(4) Other	10	44	21

Procedure. Participants, who volunteered to take part in an online study about "the relationship between heterosexuals and LGBTIQ+ individuals" first completed demographic

[12] Cis-heterosexuals are female and male heterosexuals whose gender (identity) matches the sex they were assigned at birth. We refer to all other participants as LGBTIQ+ individuals.

information and the measure of system justification. Next, participants were confronted with a paragraph about the existing group-based disparities in the LGBTIQ+ context:

"Even though the Swiss/German society has the ideal of a tolerant society, various domains exist in which LGBTIQ+ individuals are discriminated against. The unequal treatment of same-sex partnerships is, despite important steps towards the implementation of the principle of equal treatment, still a problem - e.g. the adoption law, marriage, or the protection from discrimination."

As a response to this statement, participants completed the measures of their power- and morality-related needs. Upon completion, participants were thanked and debriefed.

Measures. All items were assessed using 7-point-Likert scales (1 = I strongly disagree, 7 = I strongly agree).

System justification. We adapted the 8-item system justification scale (Jost & Kay, 2005) to the LGBTIQ+ context (e.g., "Everyone, heterosexuals or homosexuals, have a fair shot at wealth and happiness"). We chose a broader definition for participants who were not cis-heterosexual or cis-homosexual (e.g., "Everyone, heterosexuals or LGBTIQ+ people, have a fair shot at wealth and happiness"). In light of the results of the Confirmatory Factor Analysis reported below, we omitted the 2 reverse-coded items[13], obtaining Cronbach's α = 0.82.

Need for power. Adapted from SimanTov-Nachlieli and Shnabel (2014), four items assessed participants' need for power (e.g., "We should do everything possible to increase the influence of [participant's ingroup] on the state's decision making and legislation"); α = 0.95.

[13] Running the regression with a system justification scale based on all items leaves our conclusions intact. The pattern of significant and non-significant results was the same with one exception. For Study 2, moderator analysis indicated that women and men significantly differed on wish to act more morally ($b_{\text{act-more-morally}}$ = -.72, p = .035, 95%: [-1.40, -0.05]) when including the reversed-coded items, whereas we found a marginal effect when excluding the reserved-coded items.

Moral shame. Three items measured participants' sense of moral shame (e.g., "I sometimes feel ashamed because as [participant's ingroup] our group enjoys privileges that [participant's outgroup] don't"); $\alpha = 0.95$.

Act more morally. Adjusted from SimanTov-Nachlieli, Shnabel, and Halabi (2016), three items measured participants' wish that their ingroup would behave more morally, even at the cost of giving up privileges (e.g., "In order to give [participant's outgroup] equal treatment [participant's ingroup] should be ready to pay a certain price if needed"); $\alpha = 0.86$.

Expected acknowledgement. Three items measured participants' expectation that the outgroup should acknowledge that their ingroup is moral (e.g., "[Participant's outgroup] should acknowledge that they get totally fair treatment from [participant's ingroup] in Switzerland/Germany"); $\alpha = 0.90$. This measure is similar to the measure of "feeling wronged" (e.g., "People from my ingroup are often being accused of racism with no good reason") developed by Saguy et al. (2013). Yet whereas their scale focuses on "the experience of feeling unfairly accused for harboring racial or ethnic biases" (p. 292), our measure focuses on the reputational motivation stemming from this experience, namely the wish that outgroup member would admit that there is no reason to accuse the ingroup of being immoral.

Need for moral image. Modeled after the measure used in previous research (Shnabel & Nadler, 2008), four items measured participants' need for positive moral image (e.g., "It is very important for me that [participant's outgroup] will perceive us as moral"); $\alpha = 0.88$.

Results[14]

Confirmatory Factor Analysis. Considering that our scales were adapted or newly constructed, we first ran confirmatory factor analyses (CFA) to assess the viability of assigning items to scales as planned. To evaluate the goodness of fit of our 6-factor model without cross-loadings and error correlations, we used the following criteria of good fit (Hu & Bentler, 1999): $\chi 2/df < 3$; RMSEA < .06; SRMR < .08; and CFI > .95.

After removing the 2 reverse-coded items from the system justification scale, we obtained a good fit for both (cis-)heterosexuals ($\chi 2/df = 1.63$; RMSEA = 0.05; SRMR = 0.06; NNFI = 0.96; CFI = 0.97) and LGBTIQ+ individuals ($\chi 2/df = 1.95$; RMSEA = 0.05; SRMR = 0.05; NNFI = 0.95; CFI = 0.96).

In both groups, the strongest factor correlation was between moral shame and wish that the ingroup would act more morally. Thus, we also assessed the fit of a model in which the items of both scales loaded on a common factor. This model fit was clearly worse for both (cis-)heterosexuals ($\chi 2/df = 2.28$; RMSEA = 0.07; SRMR = 0.07; NNFI = 0.92; CFI = 0.93) and LGBTIQ+ individuals ($\chi 2/df = 2.65$; RMSEA = 0.06; SRMR = 0.05; NNFI = 0.91; CFI = 0.92). In summary, the CFA indicated support for the assumption of 6 unidimensional constructs so we proceeded by averaging the items to obtain scale scores.

Hypothesis Tests. Preliminary analyses revealed that the results were similar for the different LGBTIQ+ subgroups ([cis-]homosexual, [cis-]bisexual, transgender/intersex individuals). Thus, we present the results for all LGBTIQ+ individuals together.

According to Hypothesis 1, need for power should be stronger among LGBTIQ+ individuals and more strongly negatively predicted by system justification compared with

[14] We used R (Version 3.6.1; R Core Team, 2016) and the R-packages lavaan (Version 0.6.5; Rosseel, 2012), papaja (Version 0.1.0.9842; Aust & Barth, 2016), and psych (Version 1.8.12; Revelle, 2016) for our analyses.

(cis-)heterosexuals. The means and correlations shown in Table 3 are consistent with this hypothesis. The effect size of the difference in need for power between LGBTIQ+ individuals and (cis-)heterosexuals was very large, Cohen's $d = 2.32$, $p = < .001$, 95% CI: [2.12, 2.52]. Figure 2. Relationship between system justification and need for power (Study 1). Figure 2 shows scatterplots and regression lines with 95% confidence bands for the relationship between system justification and need for power.

Table 3
Means (SDs) and Correlations (Study 1)

Variable	Heterosex.	LGBTIQ+	(1)	(2)	(3)	(4)	(5)	(6)
(1) System Justification	3.78 (1.19)	3.26 (1.10)	1.00	0.12	-0.30***	-0.23**	0.39***	0.17
(2) Need for Power	2.31 (1.60)	5.48 (1.21)	-0.28***	1.00	-0.16	-0.35***	0.35***	0.09
(3) Moral Shame	4.49 (1.78)	2.42 (1.46)	0.24***	-0.01	1.00	0.62***	-0.14	0.25***
(4) Act More Morally	5.68 (1.30)	3.60 (1.68)	0.24***	-0.11	0.55***	1.00	-0.16	0.26***
(5) Exp. Acknowledgment	4.14 (1.78)	5.45 (1.47)	0.01	0.41***	0.08	0.16**	1.00	0.43***
(6) Need for Moral Image	4.80 (1.65)	5.71 (1.46)	0.16**	0.11	0.18**	0.30***	0.38***	1.00

Note. The lower (upper) triangle shows correlations among LGBTIQ+ (cis-heterosexual) participants.
*** $p < .001$, ** $p < .01$, * $p < .05$.

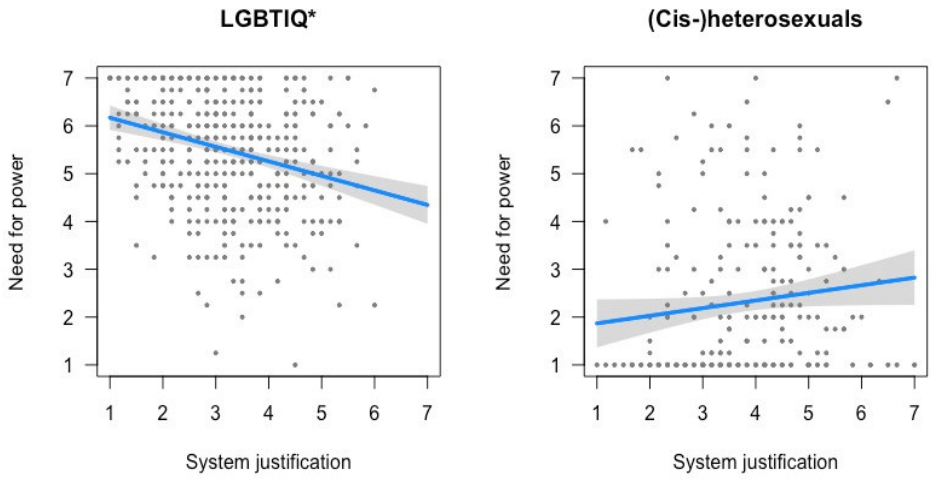

Figure 2. Relationship between system justification and need for power (Study 1).

According to Hypothesis 2, (cis-)heterosexuals were expected to score higher on the constructs reflecting their need to restore their ingroup's moral-essence (i.e., moral shame and wish to act more morally). Moreover, their system justification tendencies should be more strongly negatively related to these constructs compared with LGBTIQ+ individuals.

Results were consistent with this hypothesis. More specifically, (cis-)heterosexuals expressed greater moral shame than LGBTIQ+ individuals (Cohen's d = 1.30, p = < .001, 95% CI: [1.13, 1.47]) and a greater wish to act more morally (Cohen's d = 1.34, p = < .001, 95% CI: [1.17, 1.51]). Furthermore, as can be seen in Figure 3, system justification was indeed more strongly negatively related to these variables among (cis-)heterosexuals ($b_{\text{moral-shame}}$ = -0.45, p = < .001, 95% CI: [-0.63, -0.27]; $b_{\text{act-more-morally}}$ = -0.25, p = < .001, 95% CI: [-0.38, -0.12]) than among LGBTIQ+ individuals, for whom we found positive relationships ($b_{\text{moral-shame}}$ = 0.30, p = < .001, 95% CI: [0.18, 0.43]; $b_{\text{act-more-morally}}$ = 0.37, p = < .001, 95% CI: [0.23, 0.51]). Moderator analyses indicated that the differences between these coefficients were significant ($b_{\text{moral-shame}}$ = 0.75, p = < .001, 95% CI: [0.55, 0.96]; $b_{\text{act-more-morally}}$ = 0.62, p = < .001, 95% CI: [0.42, 0.82]).

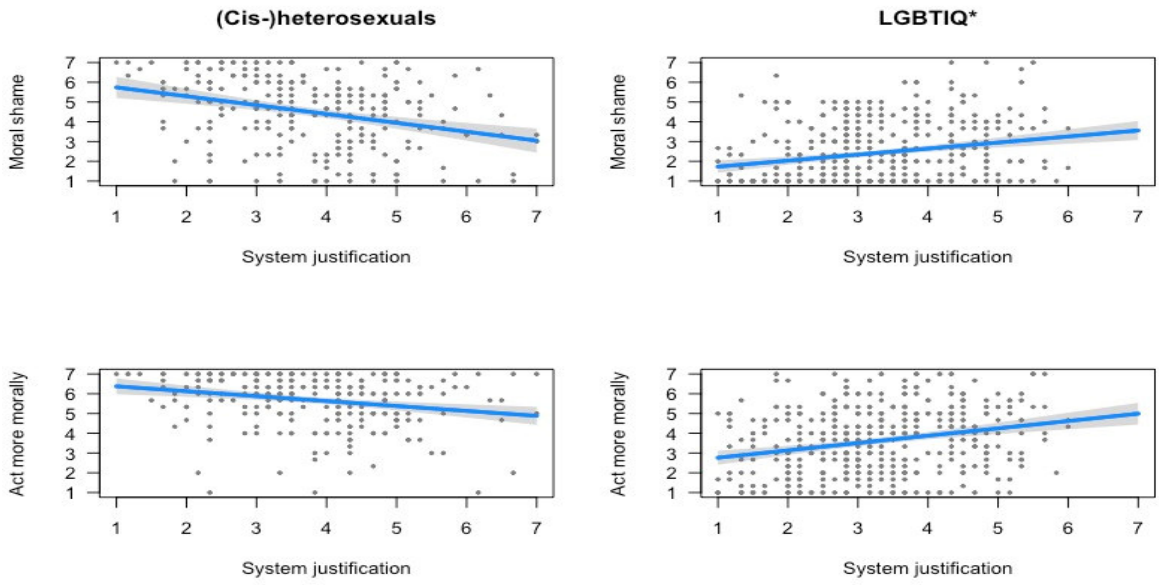

Figure 3. Relationship between system justification and facets of the need for restoration of moral essence (Study 1)

Next we analyzed the need to defend the ingroup's moral image. Consistent with the fact that LGBTIQ+ individuals are morally stigmatized, but contrary to the general logic of the needs-based model, need for moral image (Cohen's d = -0.60, p = < .001, 95% CI: [-0.76, -0.44]) and expected acknowledgement (Cohen's d = -0.82, p = < .001, 95% CI: [-0.98, -0.66]) were higher among LGBTIQ+ individuals than among (cis-)heterosexuals. Notably, as predicted by Hypothesis 3, system justification was positively related to these variables among (cis-)heterosexuals ($b_{\text{need-for-moral-image}}$ = 0.23, p = .008, 95% CI: [0.06, 0.40]; $b_{\text{expected-acknowledgment}}$ = 0.58, p = < .001, 95% CI: [0.41, 0.75]).

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As seen in Figure 3, the relationships observed among LGBTIQ+ individuals ($b_{\text{need-for-moral-image}}$ = 0.20, p = .002, 95% CI: [0.07, 0.33]; $b_{\text{expected-acknowledgment}}$ = 0.01, p = .006, 95% CI: [-0.12, 0.13]) were only partially different from the relationships among (cis-)heterosexuals. Moderator analyses indicated that the slope difference was significant for expected acknowledgment (b = -0.58, p = < .001, 95% CI: [-0.78, -0.37]), but it was not significant for need for moral image (b = -0.03, p = .777, 95% CI: [-0.24, 0.18]).

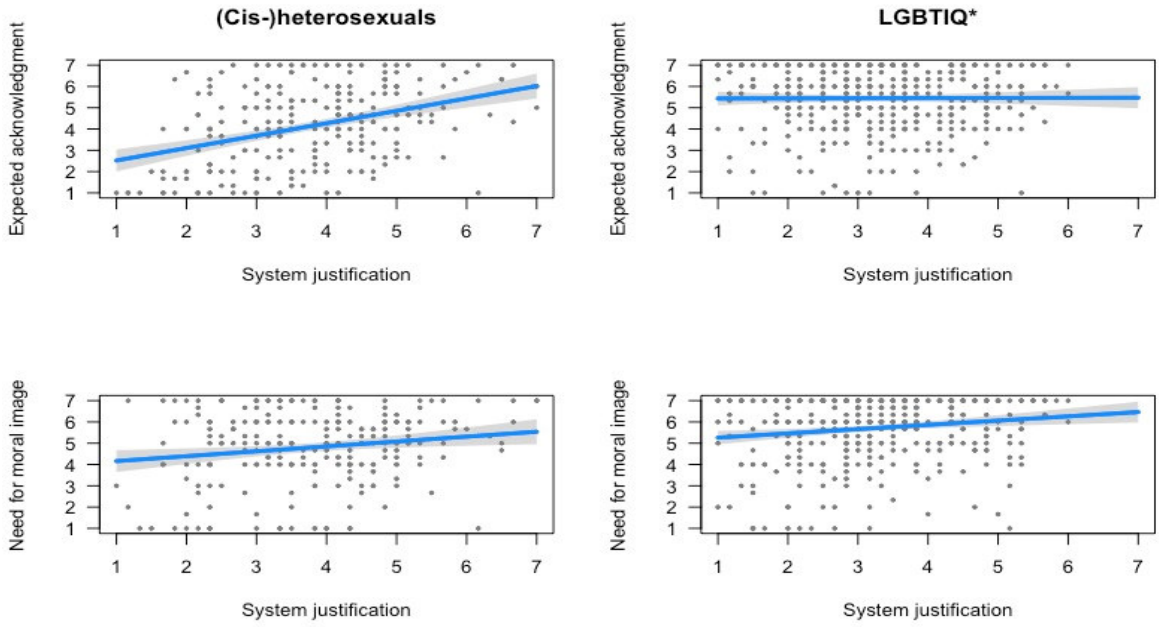

Figure 4. Relationship between system justification and facets of the need to defend the ingroup's moral image (Study 1).

Discussion

In line with the predictions derived from the needs-based model, LGBTIQ+ individuals reported a greater need for power in response to group-based disparities than (cis-)heterosexuals. As expected, system justification was negatively associated with need for power among LGBTIQ+ individuals, but slightly positively among (cis-)heterosexuals. Results for the morality-related needs were also in line with our assumptions.

(Cis-)Heterosexuals reported a greater need to restore the ingroup's moral essence than LGBTIQ+ individuals Specifically, they expressed greater moral shame and wish that their ingroup would act more morally towards LGBTIQ+ individuals, and this was especially the case the lower their system justification tendencies were. In contrast, among LGBTIQ+ individuals, higher system justification predicted greater moral shame and wish that their ingroup would act more morally. One possible explanation is that this reflects stigma internalization. Internalized homophobia is a process by which LGBTIQ+ individuals come to accept and internalize negative views about their group (Berg, Lemke, & Ross, 2017).

Such homonegativity predicts lower collective action tendencies among LGBTIQ+ individuals (Górska, Bilewicz, & Winiewski, 2017).

Contrary to the needs-based model's logic, LGBTIQ+ individuals reported a stronger need to defend the ingroup's moral image than (cis-)heterosexuals. It seems that the unique combination of structural disadvantage and moral stigmatization evokes both power and morality-related needs in LGBTIQ+ individuals. This possibility is consistent with the finding that their defensive moral needs were positively related to their need for power and negatively related to their need to restore the group's moral essence (see Table 3). Notably, the associations with system justification tendencies were in line with predictions, such that among (cis-)heterosexuals system justification predicted a stronger need for positive moral image and acknowledgment of their ingroup's morality.

Together, these results highlight that need for morality is more multifaceted than formerly assumed by the needs-based model (e.g., Shnabel et al., 2009). Here we used a more fine-grained conceptualization of morality-related motivations. Specifically, studies conducted on contexts of direct violence (atrocities committed by the British during the Iraq war; Allpress et al., 2014) have revealed different moral threats experienced by members of perpetrator groups, namely, threats to the ingroup's moral essence and threats to the ingroup's reputation (i.e., moral image). The results of Study 1 suggest that these insights can be fruitfully applied to the context of structural inequality between (cis-)heterosexuals and LGBTIQ+ individuals.

Study 2: Women and Men

Study 2 probed into the generalizability of the results to the context of gender inequality. Women in Israel still face structural disadvantages, suffering from poverty, gender-based violence, and inequalities in the labor market (Tzameret-Kertcher, Herzog, & Chazan, 2016). The gender context is different from that of Study 1 in two major respects:

First, whereas stereotypes about LGBTIQ+ individuals present them as immoral (e.g., Jayaratne et al., 2006), stereotypes about women portray them as high on morality (Glick & Fiske, 2001). Second, because men and women are mutually dependent for satisfying their reproductive needs (Guttentag & Secord, 1983), group interdependence in this particular context is perhaps greater than in any other context of group-based inequality (Glick & Fiske, 2001). Since group interdependence is associated with perceptions of goal alignment (Esses, Jackson, Dovidio, & Hodson, 2015) and the motivation to avoid conflict (Jackman, 1994), it might be harder to detect divergence of needs among men and women.

A further goal of Study 2 was to better understand the source of the group differences in the power and morality-related needs. For example, group differences in need for power could result either from an increase in the power-need of disadvantaged-group members in response to information about inequality (the prediction derived from the needs-based model) or a decrease among advantaged-group members (or both). To shed light on this issue, in Study 2, after exposing all participants to information about inequality (as in Study 1), we asked them to indicate, using bipolar scales with neutral levels represented by their midpoints (see SimanTov-Nachlieli & Shnabel, 2014, for a similar approach), whether and how reading this information affected their needs. We hypothesized that following the exposure to information about inequality, women would report increased *need for power*, whereas men would report increased *morality-related needs*.

Method

Participants. We intended to collect as many participants as possible during the academic term. Participants were 154 undergraduate students in Israel who participated in exchange for being included in a raffle of monetary prizes. Ten participants failed the instructional manipulation check (Oppenheimer, Meyvis, & Davidenko, 2009), which tested whether they had read the experimental instructions. Hence, the final sample included 83

men (M_{age}= 26, SD_{age} = 2.50) and 61 women (M_{age} = 23, SD_{age} = 1.69).

Procedure. Participants, who volunteered to take part in an online study about "the relationship between men and women in Israel" first completed demographic information and the measure of system justification. Next, participants were exposed to a text about gender inequality:

"A recent comprehensive study revealed unequivocal evidence showing that the gap between men and women in the Israeli society still exists and even expands. Women generally do not get equal treatment to that of men, and the belief that gender equality has been achieved has no ground in reality."

The text then continued on to review various domains in which women are discriminated against. As a check of text comprehension, participants were asked to indicate the extent to which —according to the text they had read— gender relations in Israel were marked by inequality (1 = there is inequality against men, 4 = there is no gender inequality, 7 = there is inequality against women).

Finally, participants indicated to which extent the text they had read affected their power and morality-related needs. Upon completion, participants were thanked and debriefed.

Measures. System justification. Participants completed a measure of gender-specific system justification using 7-point Likert scales (1 = not at all, 7 = very much). Seven items were translated to Hebrew from Jost and Kay's (2005) scale (e.g., "Society is set up so that men and women usually get what they deserve."). As in Study 1, we deleted the 2 reverse-coded items from the scale. All remaining items were averaged; $\alpha = 0.85$.

Finally, participants indicated on 9-point bipolar scales to which extent the text they had read affected (–4 = decreased, 0 = did not change, +4 = increased) the following constructs (items were similar to those used in Study 1, with slight adaptations to the

present context):

Five constructs measured to which extent the text they had read affected their power and morality-related needs.

Need for power. Four items measured participant's change in the need for power (e.g., "To increase the influence of [participant's ingroup (i.e., men/women)] in the Israeli society"); $\alpha = 0.95$.

Moral shame. Three items measured participants' sense of moral shame (e.g., "I sometimes feel ashamed because as [participant's ingroup] our group enjoy privileges that [participant's outgroup] don't"); $\alpha = 0.92$.

Act more morally. Three items measured participants' wish that their ingroup would behave more morally (e.g., "We [participant's ingroup] have to change our behavior in order to be more moral towards [participant's outgroup], even if it involves giving up some privileges"); $\alpha = 0.78$.

Expected acknowledgment. Three items measured participants' wish that the outgroup would acknowledge that they receive fair treatment from the ingroup (e.g., "[Participant's outgroup] should acknowledge that they receive entirely fair treatment from [participant's ingroup]); $\alpha = 0.78$.

Need for moral image. Four items measured participants' need for positive moral image (e.g., "It is very important for me that [participant's outgroup] will perceive us as moral"); $\alpha = 0.94$.

Results

The comprehension check confirmed that the text was perceived as intended. Participants' score on the item asking about the extent to which, according to the text, gender relations in Israel were marked by inequality was significantly above four, the scale's

Table 4
Means (SDs) and Correlations (Study 2)

Variable	Men	Women	(1)	(2)	(3)	(4)	(5)	(6)
(1) System Justification	4.22 (1.09)	3.23 (1.01)	1.00	0.20	-0.40**	-0.52***	0.50***	0.35**
(2) Need for Power	-1.84 (1.22)	1.21 (1.26)	-0.30	1.00	-0.30*	-0.35**	0.55***	0.00
(3) Moral Shame	1.12 (1.45)	-1.85 (1.83)	0.00	-0.13	1.00	0.65***	-0.58***	0.01
(4) Act More Morally	1.28 (1.45)	0.53 (2.51)	-0.08	0.30	-0.28	1.00	-0.59***	-0.02
(5) Exp. Acknowledgment	-0.82 (1.68)	0.24 (1.12)	0.10	0.30	-0.06	0.17	1.00	0.13
(6) Moral Image	0.73 (1.41)	0.16 (1.76)	0.24	-0.08	0.35	-0.20	0.23	1.00

Note. The lower (upper) triangle shows correlations among female (male) participants. Values on the dependent variables (variables 2-6) smaller than zero represented decreases, values larger than zero represented increases, and the value zero was equivalent to no change.
*** $p < .001$, ** $p < .01$, * $p < .05$

neutral midpoint ($M = 6.83$, $SD = 0.52$, Cohen's $d = 5.50$, $t(143) = 65.96$, $p = < .001$, 95% CI: [6.75, 6.92]). Table 4 shows descriptive statistics of all other variables.

Hypothesis Tests. Consistent with Hypothesis 1, we found that in response to information about group-disparities women generally reported increased need for power (see Table 4). This value was significantly above the scale's neutral midpoint representing "no change" ($t(60) = 7.52$, $p = < .001$, 95% CI: [0.89, 1.53]). By contrast, men reported decreased need for power ($t(81) = -13.64$, $p = < .001$, 95% CI: [-2.11, -1.57]). The effect size of the difference in need for power between women and men was very large (Cohen's $d = 2.25$, $p = < .001$, 95% CI: [1.82, 2.67]). As expected, system justification negatively predicted this reported change in need for power among women ($b_{power} = -0.37$, $p = .019$, 95% CI: [-0.68, -0.06]), but slightly positively among men ($b_{power} = 0.23$, $p = .069$, 95% CI: [-0.02, 0.47]). Moderated multiple regression analyses indicated that the difference between these coefficients was significant ($b_{power} = 0.60$, $p = .003$, 95% CI: [0.21, 0.99]). The pattern of results was similar to the pattern observed in Study 1. Figure 5 shows scatterplots and

regression lines with 95% confidence bands for the relationship between system justification and need for power.

Regarding the need to restore the ingroup's moral essence, the means and correlations shown in Table 4 are consistent with Hypothesis 2. Specifically, we found that in response to information about group-disparities, men reported increased moral shame and wish to act more morally ($t(82) = 6.57$, $p = < .001$, 95% CI: [0.78, 1.45]; $t(82) = 7.47$, $p = < .001$, 95% CI: [0.94, 1.62]). Men reported stronger increases than women (Cohen's $d_{\text{moral-shame}} = 1.78$, $p = < .001$, 95% CI: [1.38; 2.16]; Cohen's $d_{\text{act-more-morally}} = 0.37$, $p = .030$, 95% CI: [0.04, 0.70]). As expected, system justification was negatively related to the increases reported by men ($b_{\text{moral-shame}} = -0.63$, $p = < .001$, 95% CI: [-0.90, -0.36]; $b_{\text{act-more-morally}} = -0.78$, $p = < .001$, 95% CI: [-1.03, -0.53]), whereas it was unrelated to changes among women ($b_{\text{moral-shame}} = -0.01$, $p = .976$, 95% CI: [-0.48, 0.46]; $b_{\text{act-more-morally}} = -0.20$, $p = .539$, 95% CI: [-0.85, 0.45]; see Figure 7). Moderator analyses indicated that the group differences between these coefficients were only significant for moral shame ($b_{\text{moral-shame}} = -0.62$, $p = .017$, 95% CI: [-1.13, -0.11]; $b_{\text{act-more-morally}} = -0.58$, $p = .060$, 95% CI: [-1.19, 0.03]). .

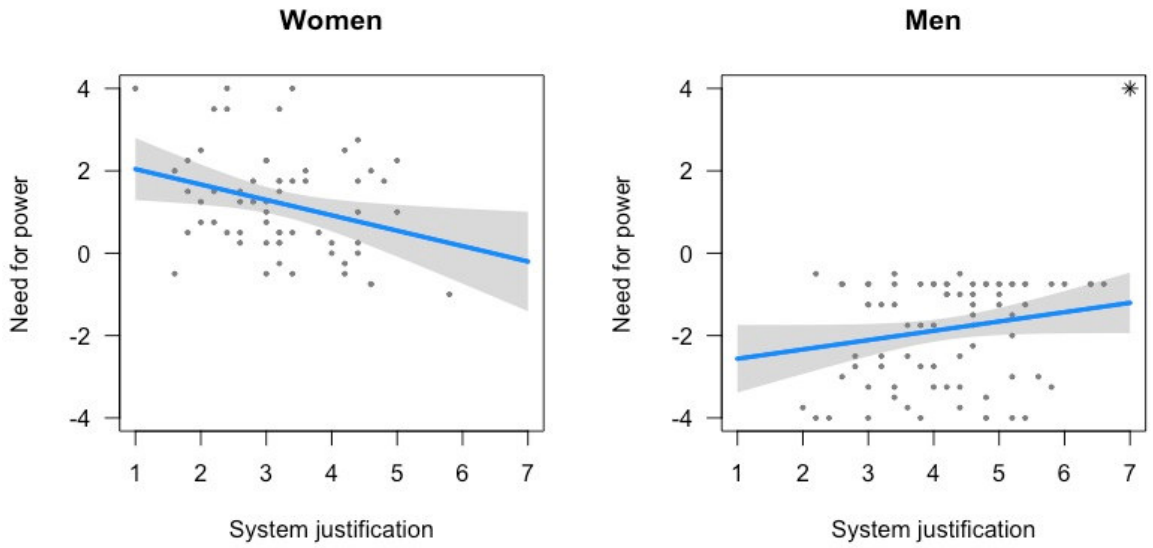

Figure 5. Relationship between system justification and need for power (Study 2).
The participant depicted as a star was considered an outlier and not included in the regression analysis.

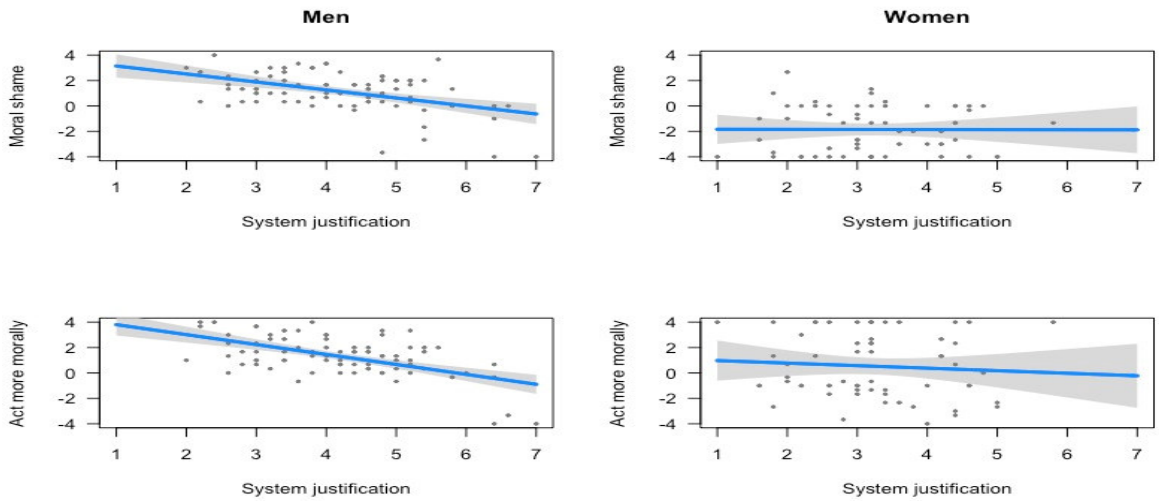

Figure 6. Relationship between system justification and facets of the need for restoration of moral essence (Study 2).

With regard to the need to defend the ingroup's moral image, the group differences were partly consistent with Study 1. Men reported significant increases in their need for moral image (p = < .001, 95% CI: [0.41, 1.04]), and these increases were greater than among women (Cohen's d = 0.35, p = .037, 95% CI: [0.02, 0.69]). However, men reported significant decreases in expected acknowledgement (p = < .001, 95% CI: [-1.20, -0.44]), and these decreases were greater than among women (Cohen's d = -0.70, p = < .001, 95% CI: [-1.04, -0.35]). Consistent with Hypothesis 3, among men, system justification predicted greater reported increases in the need to defend the ingroup's moral image (b = 0.51, p = < .001, 95% CI: [0.25, 0.77]) and smaller reported decreases in expected acknowledgment (b = 0.85, p = < .001, 95% CI: [0.56, 1.14]), whereas it was not significantly related these variables among women ($b_{\text{moral-image}}$ = 0.42, p = .059, 95% CI: [-0.02, 0.87]; $b_{\text{expected-acknowledgement}}$ = 0.11, p = .446, 95% CI: [-0.18, 0.40]). The pattern of relationships shown in Figure 7 was similar to the pattern observed in Study 1. Moderated multiple regression analyses indicated that the slope difference was significant for expected acknowledgment ($b_{\text{expected-acknowledgement}}$ = 0.74, p = .001, 95% CI: [0.31, 1.17]), but it was not significant for need for moral image ($b_{\text{moral-image}}$ = 0.08, p = .733, 95% CI: [-0.40, 0.99]).

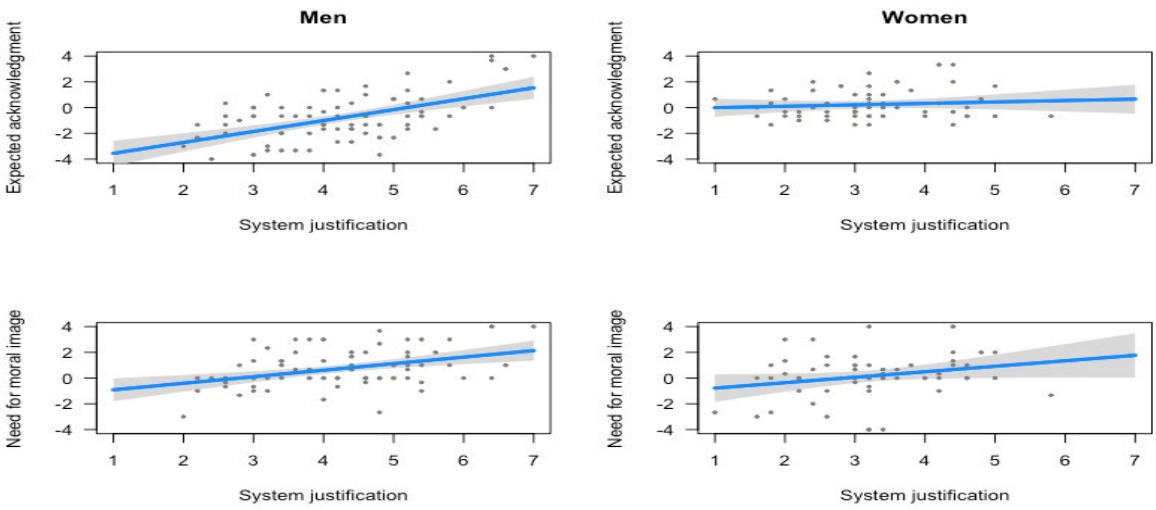

Figure 7. Relationship between system justification and facets of the need to defend the ingroup's moral image (Study 2).

Discussion

Study 2 generally replicated the results from Study 1 in the context of gender inequality. In line with the needs-based model, women reported an increased need for power in response to information about gender inequality. The lower their system justification, the stronger were the increases they reported. Opposite to the pattern found among women, men reported a decrease in their need for power, the more strongly so, the lower their system justification.

Thus, similar to the pattern observed in Study 1, group differences in need for power were most apparent for those low in system justification. Results for the need to restore the ingroup's moral essence are aligned with predictions. Both for moral shame and wish that their ingroup would behave more morally, men reported stronger increases than women. As expected, these increases were greater, the lower their system justification tendencies. In contrast, men reported greater increases in the need to defend the ingroup's moral image (i.e., need for moral image and expected acknowledgment), the higher their system justification tendencies. Thus, the pattern of relationships between system justification and the morality-

related needs found among (cis-)heterosexuals in Study 1 was replicated among men in Study 2.

Among women, system justification was unrelated to all morality-related needs. This pattern is different from the one observed among LGBTIQ+ individuals, for whom system justification was associated with higher levels of moral shame and wish that the ingroup would behave more morally. A possible interpretation is that this reflects opposite stereotypes pertaining to women's superior (Glick & Fiske, 2001) vs. LGBTIQ+ individuals' inferior (Herek & McLemore, 2013) moral virtue. Of course, it is important to bear in mind the smaller sample size (61 women vs. 422 LGBTIQ+ members) and that the confidence intervals in Study 2 were quite large.

General Discussion

The present research examined the divergent psychological needs of advantaged- (men/cis-heterosexuals) or disadvantaged-group members (women/LGBTIQ+ individuals). As the shared history of struggling against social disadvantage would suggest, LGBTIQ+ individuals and women expressed a greater need for power in response to information about group-based disparities than advantaged-group members. This need for power was stronger among disadvantaged-group members whose system justification was low. This finding is consistent with research showing that system justification predicts less support for collective action (Becker & Wright, 2011; Calogero, 2013), greater acceptance of sexual violence (Chapleau & Oswald, 2014), and greater stigma internalization (Bahamondes-Correa, 2016; Pacilli, Taurino, Jost, & van der Toorn, 2011).

In response to information about group-based disparities, (cis-)heterosexuals and men expressed greater moral shame than disadvantaged-group members and more strongly wished that the ingroup would act more morally, which is consistent with the idea that social privileges can produce a need to restore the ingroup's moral essence (Moscovici & Pérez,

2009). The need to restore moral essence was stronger among low system justifiers. Thus, consistent with the needs-based model's assumptions (Shnabel & Ullrich, 2013), the divergence of groups' psychological needs was most pronounced among group members low on system justification. These results replicate and extend Siem et al.'s findings (2013) that the divergence of needs postulated by the needs-based model are contingent on perceived illegitimacy. Whereas legitimacy was manipulated by Siem et al. (2013) in an either-or-fashion, the present research indicates that individual differences in system justification predict the group-specific needs analogously, increasing the generalizability of Siem et al.'s (2013) conclusions.

A second contribution of the present research was to elaborate on the meaning of the need for morality postulated by the needs-based model for advantaged-group members. Building on the distinction between moral essence and image (Allpress et al., 2014), we assumed that high system justifiers being confronted with group-based disparities would desire a positive moral image and expect the outgroup to acknowledge the ingroup's morality, downplaying the need to change their own moral conduct. In contrast, low system justifiers should lack this defensive motivation and experience moral shame and wish that their ingroup would act more morally in the light of group-based disparities. Results supported our assumptions. We found that (cis-)heterosexuals and men low in system justification experienced moral shame and wanted to take action on behalf of LGBTIQ+ individuals and women. This is consistent with work showing that although advantaged-group members are generally motivated to maintain their dominance (Sidanius & Pratto, 1999) they may also become vocal and act in solidarity with disadvantaged groups (e.g., Selvanathan et al., 2018).

In contrast, (cis-)heterosexuals and men high in system justification expressed a motivation to protect their ingroup's moral reputation not through changing the status quo, but by changing the views of the disadvantaged group about it. This finding is consistent with previous work showing moral defensiveness among advantaged-group members, such as engagement in competitive victimhood (attempts to establish that their group is the "true" victim of societal injustice; Sullivan, Landau, Branscombe, & Rothschild, 2012). Viewed in conjunction with the higher need for power among high system justifiers, the results suggest that these advantaged-group members' heightened wish for acknowledgement reflects a desire to reinforce the existing social arrangement by bestowing moral legitimacy on the ingroup.

These findings extend previous work on advantaged-group members' moral defensiveness (e.g., Miron, Branscombe, & Biernat, 2010) by suggesting that among high system justifiers power-related concerns may be disguised as morality-related concerns. What does the present research reveal about the specific needs arising from social disadvantage based on gender, gender-identity, and sexual orientation? We found that disadvantaged-group members were on average less prone to system justification than advantaged-group members (which speaks against the status-legitimacy hypothesis, see also Brandt, 2013). Yet, the negative association between system justification and need for power among disadvantaged-group members points to a basic barrier to collective action, because the weakened need for power among high system justifiers may undermine action among LGBTIQ+ individuals (Pacilli et al., 2011) and women (Becker & Wright, 2011) to improve their group's societal position. Conversely, a heightened need for power alone will not necessarily translate into collective action. The goal of the present research was not to predict collective action participation and, therefore, did not measure core predictors of collective action. Future research should integrate group-specific needs with established predictors of collective action

(e.g., identification, anger, efficacy, moral conviction, van Zomeren, 2013) in attempts to generalize the reported results to actual collective action participation.

Besides experiencing a smaller need for power, LGBTIQ+ individuals with high system justification experienced greater moral shame and wish that their ingroup would act more morally towards (cis-)heterosexuals, suggesting that they might link their sexual orientation and/or gender identity to immoral behavior (Herek & McLemore, 2013; Jayaratne et al., 2006), internalize societies' homonegativity (Berg et al., 2017; Nadal & Mendoza, 2014), and have lower self-esteem (Lemke, Tornow, & PlanetRomeo.com, 2015).

On the practical level, it has been argued that to be impactful in their respective social movements, LGBTIQ+ individuals and women must mobilize ingroup members but also encourage men and cis-heterosexuals to act in solidarity (Simon & Klandermans, 2001; Subašic, Reynolds, & Turner, 2008). Our findings have implications for the planning of effective communication strategies aimed at recruiting people to the cause of social equality. Highlighting existing disparities may be effective if the goal is to recruit individuals low on system justification, who in response to information about inequality express high levels of need for power (disadvantaged-group members) or motivation to improve their ingroup's moral conduct (advantaged-group members). These heightened needs may translate into increased willingness to act for change.

However, if the goal is to recruit high system justifiers, using system-affirmation strategies (Brescoll, Uhlmann, & Newman, 2013) may be a prerequisite. Such strategies may (at least partially) satisfy high system-justifiers' need to feel that the system is secure (legitimate and stable, Turner & Brown, 1978), which might reduce their defensiveness. To illustrate, activists may highlight that nowadays, more than in any other historical period, LGBTIQ+ individuals or women receive fair treatment, yet some additional changes are required to further fortify the existing system. This type of message, which legitimizes and

highlights the positive aspects of the existing system rather than merely criticizing it, may be more likely to recruit high system-justifiers than the message that a radical change is required.

In addition, messages aimed at recruiting advantaged-group members high in system justification, who are motivated to defend their ingroup's moral image, can become more effective if they include an affirmation of the advantaged group's morality (see Ditlmann, Purdie-Vaughns, Dovidio, & Naft, 2017). Understanding the different psychological needs of advantaged- and disadvantaged-group members exposed to information about inequality, and the personal tendencies that shape these needs, can better enable practitioners to structure messages and social environments in ways that increase group members' support for social equality.

Chapter 4

Article 2

How Does Intergroup Contact Affect Support for Social Change?

Article 2

A large-scale test of the link between intergroup contact and support for social change.

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Abstract

Beginning with the historic racial desegregation in the United States, and spreading to other parts of the world, policy makers, guided by the findings of social scientists, have advocated for increased intergroup contact (e.g., in schools and neighborhoods) as the key to prejudice reduction and increased social cohesion. There is contradictory evidence, however, as to whether intergroup contact hinders or promotes support for social change toward equality. Using a larger and more heterogeneous dataset than ever before in the intergroup contact literature (N = 12,997 individuals from 69 countries), we demonstrate that intergroup contact is associated with increased support for social change toward greater equality among members of advantaged groups (ethnic majorities and cis-heterosexuals) but decreased support among members of disadvantaged groups (ethnic minorities and sexual and gender minorities). Specification curve analysis revealed important variation in the size—and at times, direction—of correlations, depending on how contact and support for social change were measured. This allowed us to identify one type of support for change, willingness to work in solidarity to promote social equality, that is positively associated with intergroup contact among both advantaged- and disadvantaged-group members.

Intergroup contact is widely believed to promote social change. Since initial efforts toward racial desegregation in the US, social scientists (e.g., Allport, 1954) and practitioners have advocated for bringing majority and minority group members together in an effort to foster equality. Although there is overwhelming evidence that contact can reduce prejudice and increase social cohesion across group divides (Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006), a new line of thinking challenges our conventional understanding of intergroup contact by suggesting that contact can have an ironic effect, whereby increased perceptions of harmony may undermine the will of minority and majority group members to demand and advocate for greater equality and social justice (Dixon, Durrheim, & Tredoux, 2007). This "irony of harmony" effect (Saguy, Tausch, Dovidio, & Pratto, 2009) has important implications for public policy. Comprehensive and rigorous tests are needed to elucidate when contact may be associated with more or less support for social change. This research provides such a test using the largest and most heterogeneous dataset on intergroup contact to date.

The relation between intergroup contact and support for social change is more nuanced than is typically recognized. For members of advantaged groups (e.g., ethnic majorities and cis-heterosexuals[15]), contact with disadvantaged-group members (e.g., ethnic and LGBTIQ+ individuals[16]) generally—but not invariably—leads to greater support for intergroup equality and social change (e.g.,Dixon et al., 2007; Kamberi, Martinovic, & Verkuyten, 2017; Wright & Lubensky, 2009). Yet, some research suggests that contact can improve advantaged-group members' feelings toward disadvantaged-group members while having little impact on their support for policies designed to redress group-based inequalities

[15] The term cis-heterosexuals denotes heterosexual individuals whose gender identity corresponds to their assigned sex.

[16] The term LGBTIQ+ denotes individuals identifying as lesbian, gay, bisexual, transgender, intersexual, queer, or other sexual and gender minorities. The LGBTIQ+ community has faced, and often continues to face, direct discrimination by cis-heterosexuals (Herek & McLemore, 2013) and structural disadvantage (e.g., exclusion for adoption; United Nations Human Rights Council, 2015).

(Jackman & Crane, 1986). Support for social change among disadvantaged-group members is generally thought to be motivated by perceived injustice and anger (van Stekelenburg & Klandermans, 2013; van Zomeren, Postmes, & Spears, 2008). Yet, for disadvantaged group members, it is possible that these feelings can be undercut to the extent intergroup contact increases perceptions of harmonious intergroup relations. As a result, even without affecting underlying inequality, intergroup contact may reduce the will of disadvantaged-group members to fight for greater equality (e.g., Çakal, Hewstone, Güler, et al., 2016; Dixon et al., 2007; Kamberi et al., 2017; Wright & Lubensky, 2009). The potential for contact to both promote and undermine support for social change highlights the need for research elucidating when, for whom, and in what contexts intergroup contact increases or decreases the will of individuals to advocate and act for social equality.

Given the practical and theoretical relevance of this question, it is important to recognize that the forms, content, and nature that contact can take are as varied as are efforts to achieve social change. To illustrate, members of advantaged and disadvantaged groups may be friends with each other; alternatively, they may only be acquainted with each other, or they simply may know of people from their own group who have contact with people in the other group. Contact might also differ in its valence—it can be positive, neutral, or negative. Similarly, action for social change can include a range of activities, such as attending demonstrations, launching or signing petitions, raising peers' awareness of inequality, supporting policies that empower disadvantaged groups, or working in solidarity with other groups. To establish both whether and when contact will promote social change it is necessary to systematically assess the relationship between these different forms of contact and actions for social change.

As is typically the case in social science research, extant studies have used a wide range of conceptualizations and measures of contact and support for change to assess these

constructs. Research also makes use of a wide range of methodologies, analytic approaches, and samples of participants (e.g., Çakal, Hewstone, Schwär, & Heath, 2011; Droogendyk, Wright, Lubensky, & Louis, 2016; Reimer et al., 2017). While these diverse methods may help to triangulate the overall effects of contact, such unsystematic variation is problematic for research questions that carry critical implications for public policy. To assess the reliability of a particular finding, and the characteristics of studies that are associated with stronger, weaker, or reversed effects, a study must be repeated across many contexts using systematic variation of measures and analytic procedures. The present research is the first systematic effort to test for both the reliability of the association between contact and support for social change and its potential variability across measures and analytic decisions.

In this multinational collaboration involving a large set of established scholars and research teams, all researchers assessed the same extensive array of commonly used measures of contact and support for social change (see Table 5). This enabled us to estimate not only an overall correlation, but the conditional correlations that arise from different combinations of varied forms of contact and actions for social change (see Kenny & Judd, 2018; Patel, Burford, & Ioannidis, 2015; Rubin, 1992; Steegen, Tuerlinckx, Gelman, & Vanpaemel, 2016). Using specification curve analysis (Simonsohn, Simmons, & Nelson, 2019), we graphed the distribution of correlations between contact and support for social change that result from the many combinations of types of contact and support for change and tested for joint significance. In so doing, this research provides the most conclusive and fine-grained answer to a long-debated question.

Table 5

Overview of Constructs, Measures, and Example Items

Construct: **INTERGROUP CONTACT**	
Measures:	***Example Items:***
1) Quantity of contact†	How many [outgroup people[17]] do you know, at least as acquaintances?
2) Positive contact	When you interact with [outgroup], to what extent do you experience the following: The contact is friendly?
3) Absence of negative contact	When you interact with [outgroup], to what extent do you experience the following: The contact is unfriendly? (recoded)
4) Number of outgroup friends	How many of your friends are [outgroup]?
5) Frequency of meeting outgroup friends	How often do you meet your [outgroup] friends?
6) Quantity of indirect outgroup friends†	As far as you are aware, how many of your [ingroup] friends or close relatives have [outgroup] friends?
7) Positive indirect contact	As far as you are aware, how many of your [ingroup] friends or close relatives have had good experiences with [outgroup] members?
8) Absence of negative indirect contact	As far as you are aware, how many of your [ingroup] friends or close relatives have had bad experiences with [outgroup] members, like tensions or conflict? (recoded)
Construct: **SUPPORT FOR SOCIAL CHANGE**	
Measures:	***Example Items:***
1) Low cost collective action	Signing an online/regular petition to support action against the unequal treatment of [disadvantaged group].
2) High cost collective action	Attending demonstrations, protests or rallies against the unequal treatment of [disadvantaged group].
3) Support for empowering policies	[Disadvantaged group] should obtain much more power in the decision-centers of our society.
4) Raising ingroup awareness	When I come into contact with ingroup members, we talk about injustices in society regarding [disadvantaged group].
5) Working in solidarity	How willing are you to unite with [outgroup] to work for justice for [disadvantaged group]?

Note: †Quantity of contact and quantity of indirect outgroup friends were not included among LGBTIQ+ individuals because almost every LGBTIQ+ individual has more cis-heterosexual friends than 10 (i.e., the highest scale value) or LGBTIQ+ friends who have more than 10 cis-heterosexual friends.

[17] The in- and outgroup were adapted to the specific in- and outgroups in each context.

Setting new standards of conduct, the present research heeded calls for more collaborative, high-powered, transparent, and reproducible research processes (Nosek et al., 2015) to rigorously test the association between contact and support for social change. We collected the largest and most heterogeneous dataset ever in the intergroup contact literature, emerging over six decades ago, sampling 12,997 participants from 69 countries and four populations (ethnic majorities[18], cis-heterosexuals, ethnic minorities, and LGBTIQ+ LGBTIQ+ individuals; see Tables S10-S12 for more details). All authors complied with all relevant ethic regulations and informed consent from all included participants was obtained. While a large body of research on intergroup contact has focused on ethnic/racial groups, contact between members of the LGBTIQ+ communities and cis-heterosexuals has been largely neglected. Including samples of LGBTIQ+ individuals and cis-heterosexuals allowed examination of the association between contact and support for social change using disadvantaged and advantaged groups that are consistent across all countries. Although we expected that contact and support for social change would generally be positively related among advantaged groups (ethnic majorities and cis-heterosexuals) and negatively related among disadvantaged groups (ethnic minorities and LGBTIQ+ individuals), variations in these overall effects are of most interest. As such, this research is the first systematic test of the reliability and variability of the relation between contact and support for social change among members of both disadvantaged and advantaged groups in a broad range of societies.

Results

Specification Curve Analysis

The study followed a preregistered analysis plan stored along with the questionnaires, data, and code at: https://osf.io/m5pb6/?view_only=fd97cc15ba5f4874ad024680ca720bad

[18] The term ethnic minority is used as umbrella term, denoting groups within a country who are structurally disadvantaged due to their racial, ethnic, national, tribal, religious, or cultural background.

(see also Table S19). We used specification curve analysis (Simonsohn et al., 2019) to estimate bivariate correlations between contact and support for social change, conditional on measurement choices and analytic decisions (see Figure S21). With this method, we estimated the magnitude of the association between contact and social change simultaneously using every combination of available measures, maximizing transparency and credibility of results. In addition, we tested the impact of two analytic decisions typically faced by survey researchers: whether to exclude or include statistical outliers and participants who failed the attention check. Combining these four model specification factors in a full factorial design (Table S16) —5 (support for social change measures) × 8 [6 for LGBTIQ+ individuals, see Table 5] (contact measures) × 2 (attention check failures included/excluded) x 2 (outliers included/excluded) — results in 160 [120 for LGBTIQ+ individuals] model specifications. Thus, summing over the four populations, there were 600 opportunities to estimate the correlation between contact and support for social change.

First, we conducted an *individual* significance test for each single model specification. We performed one-tailed tests using an alpha of .05 in line with our preregistered directional hypotheses. Next, to test the overall hypothesis that contact predicts social change positively for advantaged groups and negatively for disadvantaged groups, we conducted a *joint* significance test (Figure S21; Simonsohn et al., 2019) for each of the four populations. Considering results of *all* 160 [120] model specifications for a given population at once, this *joint* significance test indicates whether the null hypothesis (i.e., none of the correlations are different from zero) should be rejected. Using permutation, we determined the likelihood of obtaining the observed number of significant correlations by chance (if the null hypothesis was true) by shuffling the data set 1,000 times. We rejected the null hypothesis when this likelihood was less than .05.

To examine in more detail how results depend on model specification, we visually inspected the specification curves (Figures 8 and 9). In addition, we regressed the correlation coefficient on our four model specification factors: support for social change measures, contact measures, attention check failures included/excluded, and outliers included/excluded (Table S16). This meta-regression allows us to quantify the influence of using a specific measure of contact or support for social change or analytic decision on the correlations.

Test of Preregistered Hypotheses

Table 6 shows the number of significant correlations between contact and support for social change that were in the predicted direction among the 160 [120] model specifications for each of the four populations as well as the *p*-values from the joint significance test. For all four populations, the number of significant correlations clearly exceeded the number expected by chance. Thus, the results of the joint significance test support the preregistered hypotheses that the correlation between contact and support for social change is positive among ethnic majority group members and cis-heterosexuals and negative among ethnic minority group members and LGBTIQ+ individuals.

Table 6
Joint Significance Tests of Preregistered Hypotheses

Population	Sample size	Number of model specifications	Number of significant correlations in the predicted direction	*p*-value
Ethnic Majorities	3,216	160	158	<.001
Cis-Heterosexuals	4,898	160	149	<.001
Ethnic Minorities	1,000	160	64	<.001
LGBTIQ+ Individuals	3,883	120	86	<.001

Note: p-values correspond to the number of shuffled datasets with as many or more significant correlations than in the original data set divided by the total number of shuffled datasets (i.e., 1,000). The smallest possible *p*-value with 1,000 reshuffled samples is $p < 1/1{,}000$.

Understanding the Variability of Results among Advantaged Groups

Figure 8A shows all results for ethnic majorities. The top of the figure shows the sorted correlations between contact and support for social change, along with confidence intervals for the population value. The bottom of Figure 8A indicates the model specification underlying each correlation. For example, the model specification that produced the largest positive correlation between contact and social change among ethnic majorities (highlighted on the far right of Figure 8A) includes *working in solidarity* with the disadvantaged group as a measure of support for social change in combination with the measure *positive contact* and excluding participants who failed the *attention check* and *statistical outliers*. Figure 8B shows all results for cis-heterosexuals. Visual examination of Figures 8A and 8B reveals that almost all correlations between contact and support for social change were positive among advantaged groups. Moreover, correlations varied considerably depending on model specification, ranging from r = .01 to r = .46 (mean r = .20*)* among ethnic majorities and from r = -.11 to r = .43 (mean r = .23) among cis-heterosexuals.

Meta-regression revealed which measures and analytic decisions produced larger or smaller correlations. The coefficients shown in parentheses in Figures 8A and 8B represent the predicted change in correlations (relative to the grand mean of correlations) resulting from using one particular measure or analytic decision (see Table S17 for individual significance tests).

The effects of using a particular measure of support for social change were similar across both advantaged groups (see cross-validation analyses in Table S18). Model specifications including *working in solidarity* as the dependent variable consistently produced larger positive correlations, whereas models including *raising ingroup awareness* as the dependent variable produced smaller positive correlations. Thus, the predicted positive correlation between contact and support for social change emerged particularly clearly with

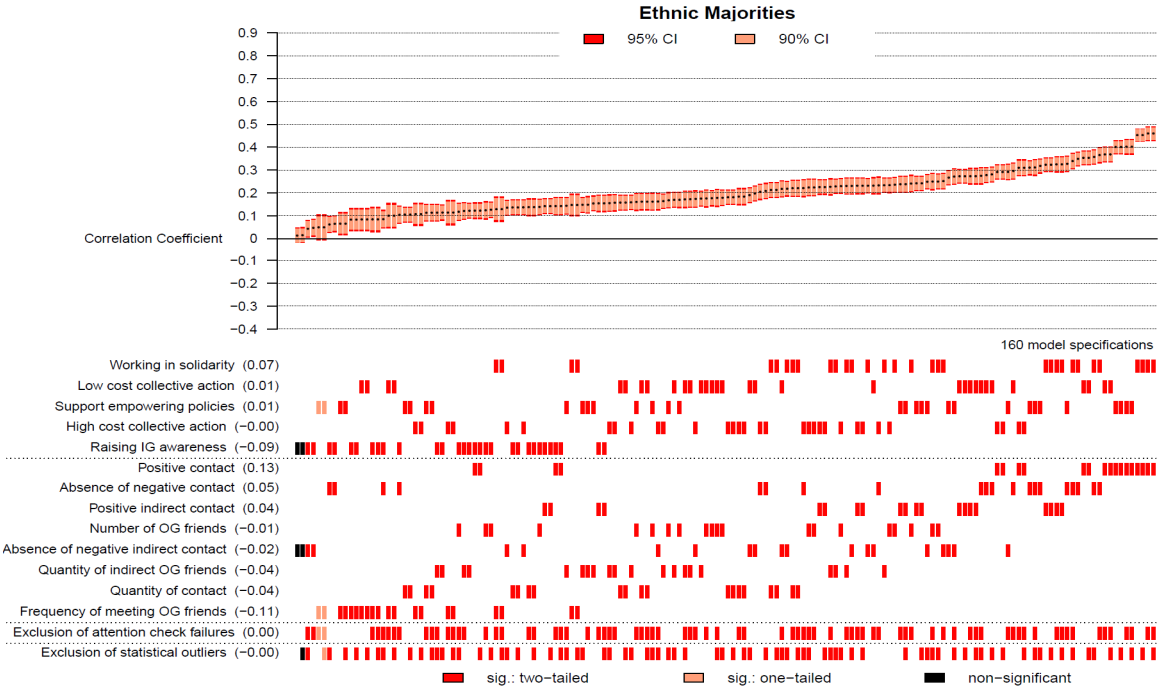

Figure 8A. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among ethnic majorities (n = 3,216).

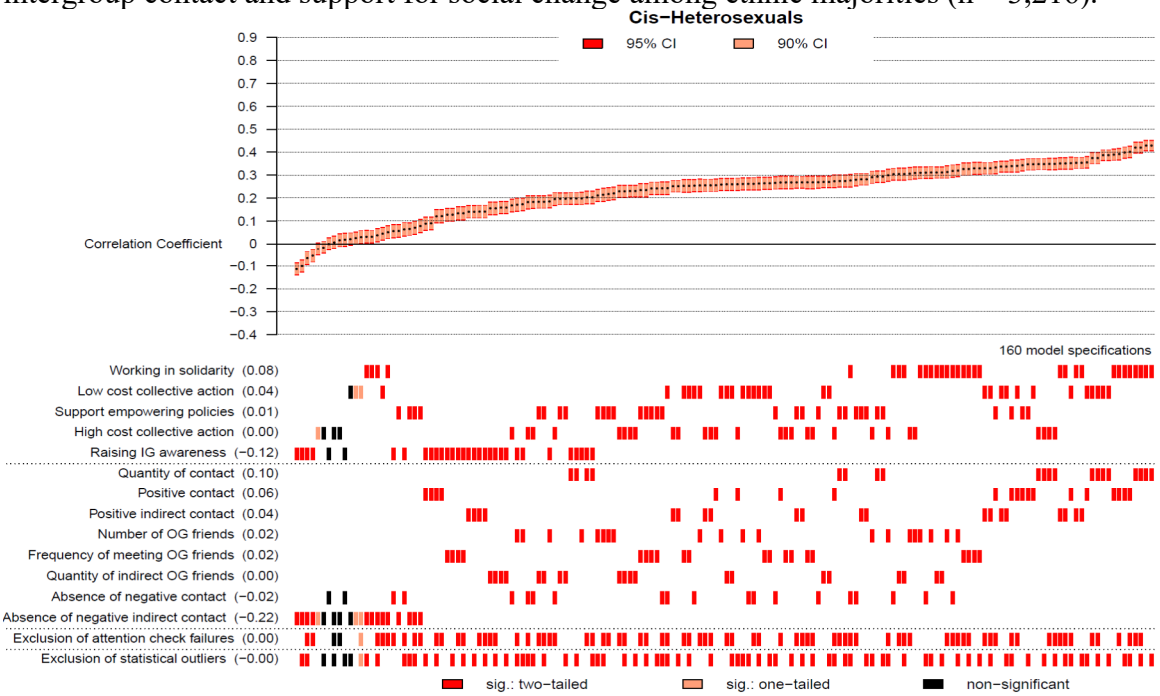

Figure 8B. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among cis-heterosexuals (*n*= 4,898).
Note: The top part of Figures 8A and 8B shows sorted correlations and 90% (95%) confidence intervals in light (dark) red. The bottom part shows the combinations of measures and analytic decisions underlying each correlation. The numbers in parentheses on the left-hand side indicate the change in size of the correlations (relative to the grand mean of correlations) resulting from using this particular measure or analytic decision.

regard to advantaged-group members' willingness to work in solidarity with members of disadvantaged groups. Among measures of contact, *positive contact* produced larger positive correlations among both ethnic majorities and cis-heterosexuals. However, the patterns for other measures were different for ethnic majorities and cis-heterosexuals. Finally, both analytic decisions—to include or exclude attention check failures or statistical outliers (i.e., analytical decisions)—had negligible effects on the size of the correlations.

Understanding the Variability of Results among Disadvantaged Groups

In contrast to the consistent positive correlations observed among advantaged groups, visual examination of Figures 9A and 9B reveals variation in correlation coefficients among disadvantaged groups, with correlations ranging from r = -.28 to r = .21 (mean r = -.04) among ethnic minorities and from r = -.37 to r = .15 (mean r = -.09) among LGBTIQ+ individuals. In fact, despite the overall support for the predicted negative relation, we also observed some positive correlations.

The specific measure of support for social change used in the model specification determined the size and direction of the correlation for both ethnic minorities and LGBTIQ+ individuals. Larger negative correlations between contact and support for social change resulted from model specifications including *raising ingroup awareness* and *high cost collective action*. By contrast, positive correlations were almost exclusively produced by *working in solidarity*. With regard to the contact measures, the most striking results were the strong negative correlations revealed by measures of *absence of negative contact*. That is, members of disadvantaged groups who reported fewer negative contact experiences (e.g., direct experience of derogation and discrimination) reported less support for social change. Also, model specifications including *number of outgroup friends* fairly consistently produced significant negative correlations. In contrast, smaller negative and even some positive correlations were found for model specifications including the *frequency of meeting outgroup*

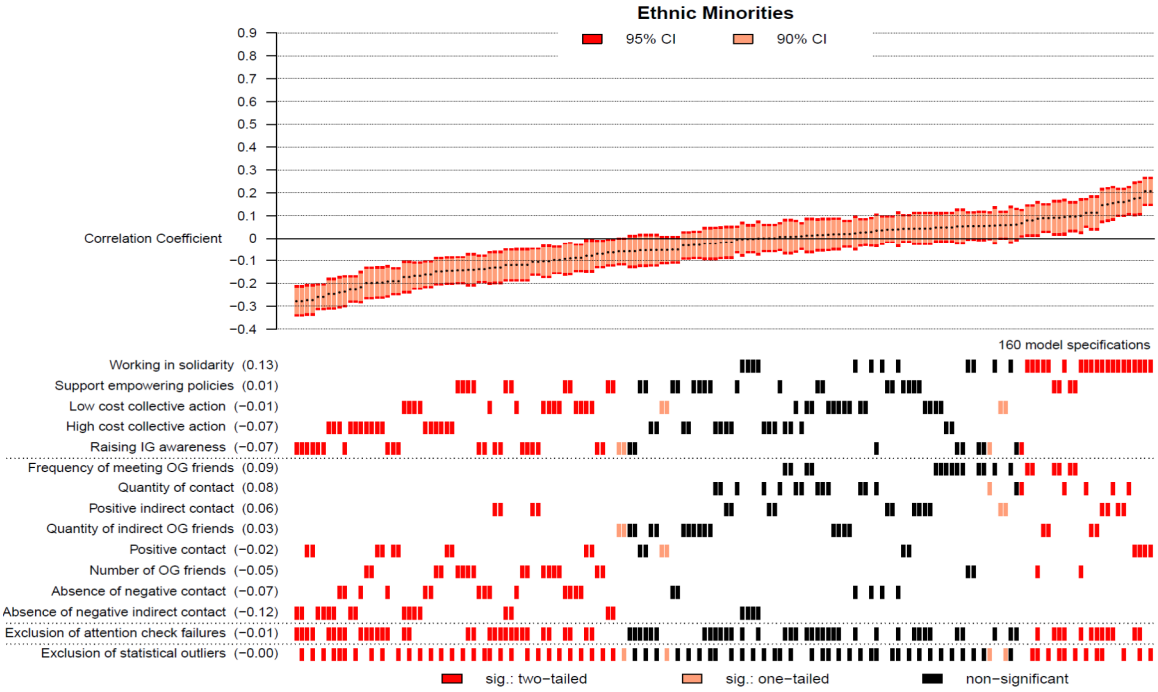

*Figure 9A. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among ethnic minorities (*n*= 1,000).*

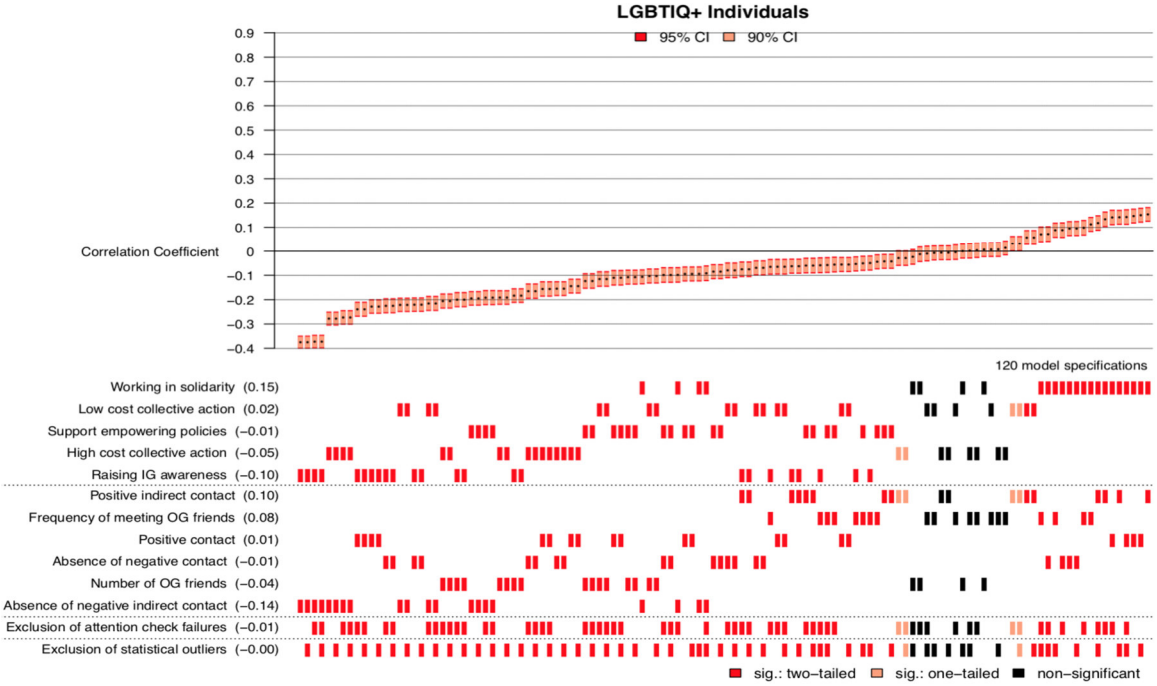

Figure 9B. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among LGBTIQ+ individuals (*n*= 3,883). Note: The top part of Figures 9A and 9B shows sorted correlations and 90% (95%) confidence intervals in light (dark) red. The bottom part shows the combinations of measures and analytic decisions underlying each correlation. The numbers in parentheses on the left-hand side indicate the change in size of the correlations (relative to the grand mean of correlations) resulting from using this particular measure or analytic decision.

friends. Interestingly, *positive contact* was positively related to *working in solidarity* but negatively related to other measures of support for social change. Again, the inclusion or exclusion of *attention check failures* and *statistical outliers* (i.e., analytic decisions) had negligible effects on the size of the correlations. Cross-validation analyses (Table S18) confirmed the impression of highly similar patterns of results between ethnic minorities and LGBTIQ+ individuals, indicating robustness and generalizability.

Discussion

The apparent dilemma that facilitating intergroup contact promises to reduce prejudice but threatens to reduce willingness to fight for social equality has important and far-reaching practical and policy implications, and thus is worthy of rigorous testing. Our confirmatory analyses support the preregistered hypotheses that contact is positively associated with support for social change among ethnic majorities and cis-heterosexuals and negatively associated with support for social change among ethnic minorities and LGBTIQ+ individuals. However, the multifaceted analyses presented here, involving 600 tests of the association between contact and support for social change, puts concerns about the potential pitfalls of intergroup contact into perspective.

First, increasing the quantity or frequency of contact with advantaged-group members does not particularly seem to dampen disadvantaged-group members' support for social change. Instead, lower support for social change among ethnic minorities and LGBTIQ+ groups tends to occur when they experience more positive and intimate contact (e.g., friendships) or lack negative contact experiences. This is consistent with research showing that contact that is positive on an individual level but does not address structural inequalities can decrease anger (Tausch, Saguy, & Bryson, 2015; Ufkes, Dovidio, & Tel, 2015), distract attention away from group-based inequality (Dixon et al., 2007; Saguy et al., 2009), and decrease identification with the disadvantaged ingroup (Tausch et al, 2015; Wright &

Lubensky, 2009). All of these effects can reduce support for social change among members of disadvantaged groups (Saguy et al., 2009; Saguy, 2017; Ufkes et al., 2015; Wright & Lubensky, 2009).

Second, among *both* advantaged and disadvantaged groups contact was positively associated with one particular form of support for social change, namely *working in solidarity*. The more contact occurs between advantaged and disadvantaged-group members, and the more positively this contact is experienced, the more willing members of both groups are to collaborate in efforts to achieve greater social equality. Endorsement of this novel measure reflects the belief that social change is not only a struggle of disadvantaged groups (Pettigrew & Hewstone, 2017). *Working in solidarity* captures a pathway to social change that is increasingly observed on the streets (e.g., straight-gay alliances) but has been largely overlooked in research on the relation between contact and social change.

Nevertheless, the results suggest inherent difficulties in leveraging solidarity for social change among advantaged and disadvantaged groups. The positive association between contact and *working in solidarity* may not outweigh the negative association between contact and engagement in *high cost collective action* and *raising ingroup awareness* among members of disadvantaged groups. If disadvantaged-group members no longer raise awareness about inequalities or engage in public protest and/or other more direct efforts to produce social change, solidarity of advantaged-group members would lack meaningful routes for deployment.

Thus, our results pose two major questions for future research. How can positive and intimate contact between groups occur without reducing disadvantaged-group members' support for social change? How can support for social change be increased among disadvantaged-group members without requiring negative contact experiences? Possible answers to both questions may be that advantaged-group members who engage in contact

should openly acknowledge structural inequalities and express support for efforts by disadvantaged-group members to reduce these inequalities (Becker, Wright, Lubensky, & Zhou, 2013; Droogendyk, Louis, & Wright, 2016). If disadvantaged-group members, allies, or interventions aim to encourage a wide range of behaviors to promote and support social change, it seems essential that contact is not simply experienced as pleasant but that it prepares both advantaged- and disadvantaged-group members to address structural inequalities.

This research makes substantial advances in our understanding of the relation between intergroup contact and social change. We found robust evidence that members of advantaged groups with more frequent, positive, and intimate forms of intergroup contact reported more support for social change. In contrast, among disadvantaged groups we found that positive contact with advantaged groups was associated with decreased support for social change. There is, however, an important exception: Among both advantaged and disadvantaged groups, contact predicted greater willingness to work in solidarity to achieve greater social equality. Thus, this research may offer a new route to reach social cohesion and social change, such that social harmony would not come at the expense of social justice.

Method

This project sampled 12,997 participants from four populations (ethnic majorities, cis-heterosexuals, ethnic minorities, and LGBTIQ+ individuals), several of them non-WEIRD (non-Western, Educated, Industrialized, Rich, and Democratic; see Henrich, Heine, & Norenzayan, 2010). We administered surveys in 69 countries, totaling 3,216 ethnic majority group members (1,040 male, 2,162 female, 14 other, M_{age} = 28.08, SD_{age} = 11.28), 4,898 cis-heterosexuals (1,575 male, 3,323 female, M_{age} = 29.47, SD_{age} = 12.84), 1,000 ethnic minority group members (412 male, 585 female, 1 other, 2 NA, M_{age} = 29.15, SD_{age} = 11.13), and 3,883 LGBTIQ+ individuals (1,445 male, 2,061 female, 377 other, M_{age} = 30.42, SD_{age} = 12.53) (see Figure S19 for inclusion criteria). This represents the largest and most heterogeneous dataset in the intergroup contact literature (Tables S10-S12 for more details).

Analytic Procedure

First, we regressed the original items on the subsample identifier variable to obtain residualized item scores. This was done to ensure that we would test the association of contact and support for social change at the level of individuals rather than at the level of subsamples or countries. Next, we conducted confirmatory factor analyses to select the final set of items and scales. Confirmatory factor analyses justified using the same eight contact scales and five support for social change scales for all four populations except for contact reported by LGBTIQ+ individuals where we used only six contact scales (Table 5, see Table S13 for a detailed overview and Tables S14 and S15 for descriptive statistics). Finally, to estimate the bivariate correlations between intergroup contact and support for social change conditional on methodological choices, we conducted specification curve analyses following Simonsohn and colleagues' procedure (201). Figure S20 gives an overview of the procedure. All steps of the specification curve analysis can be reproduced with the Master_Script.R and the underlying Functions.R script. The files and the aggregated dataset underlying the

specification curve analysis as well as the corresponding codebook can be found online (https://osf.io/m5pb6/?view_only=fd97cc15ba5f4874ad024680ca720bad).

Chapter 5

Article 3

Under Which Circumstances Is Intergroup Contact Associated with Support for Social Change Toward Greater Equality?

Article 3

The role of empowering and accepting intergroup contact in promoting social change toward greater equality.

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This article is in preparation for publication:

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Abstract:

Previous research (Hässler, Ullrich et al., 2019) has shown that the relationship between intergroup contact and support for social change is negative among disadvantaged groups, but positive among advantaged groups. Guided by the needs-based model of reconciliation, we assumed that this pattern of effects could result from the fact that positive intergroup contact satisfies advantaged group members' need for acceptance but fails to satisfy disadvantaged group members' need for empowerment. Using new measures of these group-specific needs included in the Zurich Intergroup Project (N = 11,211), we found that intergroup encounters which satisfy the need for empowerment among members of disadvantaged groups (ethnic minorities as well as sexual and gender minorities) are positively associated with support for social change, whereas accepting contact is negatively associated with support for social change. Among advantaged-group members (ethnic majorities and cis-heterosexuals), both accepting and empowering contact were positively associated with support for social change. In sum, results underline the relevance of intergroup contact not only for prejudice reduction, but also for social change. If the aim is to encourage a wide range of behaviors to promote and support social change among both disadvantaged and advantaged groups, it seems essential that the intergroup encounters are not just pleasant but empower disadvantaged groups.

Recent years have witnessed increasing interest in the question of whether creating social harmony and encouraging support for social change are two incompatible goals. Social scientists (e.g. Allport, 1954) have long advocated for desegregation based on the assumption that bringing social groups into contact reduces prejudice. Now, there is overwhelming evidence that facilitating intergroup contact indeed reduces prejudice and fosters social harmony among multiple social groups, in diverse contexts, and even in areas of current conflicts (Brown & Hewstone, 2005; Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006). Consequently, intergroup contact has long been viewed as a panacea for improving intergroup relations. This view, however, has been criticized as too simplistic. It has been argued that intergroup contact fosters social harmony at the price of discouraging disadvantaged-group members from demanding social equality (Dixon et al., 2007). Since this potential inhibition of support for social change has important policy implications, the present research sought to obtain evidence for the idea that certain forms of intergroup contact might encourage support for social change among both disadvantaged and advantaged groups. This could be a starting point for the adaptation of structured contact interventions.

We initiated the Zurich Intergroup Project (ZIP) to heed calls for more comprehensive studies on intergroup contact and support for social change (e.g., Dovidio, Love, Schellhaas, Hewstone, 2017; Pettigrew & Hewstone, 2017). A large number of international research teams worked together to generate the largest and most heterogenous dataset in the intergroup contact literature. We collected data among both disadvantaged and advantaged groups because many successful social movements have sought not only to recruit members of the disadvantaged group, but to also gain support from advantaged-group members (Simon & Klandermans, 2001; Subašic, Reynolds, & Turner, 2008). In addition, we included not only

the ethnic[19] context but also the LGBTIQ+[20] context. In the LGBTIQ+ context both disadvantaged and advantaged groups are consistent across all countries, while group-relations differ in the ethnic context. Therefore, including the LGBTIQ+ context increased the generalizability of our conclusions. Beyond the generation of this comprehensive dataset, our goal was to operationalize each construct with multiple measures so that we would be able to (i) assess the influence of operationalization on the robustness of the results and (ii) gain theoretical insights on forms of intergroup contact that would be more or less conducive to furthering social change towards greater equality.

In our previous work with this comprehensive ZIP dataset, we systematically assessed the association between intergroup contact and support for social change (Hässler, Ullrich et al., 2019). We found opposite effects of intergroup contact on support for social change: Intergroup contact was associated with reduced support for social change among disadvantaged groups (ethnic minorities and LGBTIQ+), but with increased solidarity-based support for social change among advantaged groups (ethnic majorities and cis-heterosexuals[21]). Beyond this general conclusion, we investigated the precise forms, content, and nature of intergroup contact that were most closely associated with various forms of support for social change. Regardless of the specific type and content of intergroup contact and support for social change, intergroup contact and support for social change were positively associated among advantaged groups. Among disadvantaged groups, the only positive association was found between intergroup contact and willingness to work in solidarity with the outgroup, while intergroup contact was negatively associated with all other

[19] The term 'ethnic group' is used as umbrella term denoting groups within a country who are structurally advantaged or disadvantaged due to their racial, ethnic, national, tribal, religious, or cultural background.
[20] The term LGBTIQ+ denotes individuals identifying as lesbian, gay, bisexual, transgender, intersex, queer, or other sexual and gender minorities. The LGBTIQ+ community has faced, and often continues to face, direct discrimination by cis-heterosexuals (Herek & McLemore, 2013) and structural disadvantage (e.g., exclusion for adoption; ILGA & Mendos, 2019).
[21] The term cis-heterosexuals denotes heterosexual individuals whose gender identity corresponds to their assigned sex.

forms of support for social change that we assessed: Disadvantaged-group members were less willing to raise ingroup awareness for existing group disparities, less willing to support empowering policies, and less willing to engage in collective action. Further, the type and content of contact also affected the association between intergroup contact and support for social change. Especially more positive and intimate intergroup contact seems to decrease support for social change among disadvantaged groups and might, therefore, perpetuate existing social inequalities.

In the present work, we build on our previous results to better understand how intergroup encounters must be structured to encourage support for social change among members of disadvantaged and advantaged groups. Drawing on a needs-based perspective (Nadler & Shnabel, 2015), we argue that disadvantaged and advantaged groups have different needs and goals in intergroup interactions. Consequently, positive intergroup contact could be seen as a vehicle to promote social change to the extent that it simultaneously promotes the satisfaction of group-specific needs among disadvantaged (i.e., empowerment) and advantaged groups (i.e., acceptance). Using the dataset of the ZIP, the goal of the present research was to provide the first comprehensive test of this idea and explore the independent effect of group-specific need satisfaction on support for social change among members of disadvantaged and advantaged groups in the context of ethnicity and sexual orientation/gender identity.

The Needs-Based Model

Societies all over the world are still marked by structural inequalities and power differences. According to the needs-based model (Nadler & Shnabel, 2015), members of disadvantaged and advantaged groups will experience distinct threats to their identity based on their respective group membership. These divergent threats, in turn, lead to heightened group-specific needs. To illustrate, members of disadvantaged groups are sometimes the

target of subjugation and discrimination and are often stereotyped as passive and incompetent (Fiske, Cuddy, & Glick, 2007). Thus, they experience threat to their identity as agentic social actors. In contrast, advantaged-group members' high status is often gained through the historical or present expropriation of disadvantaged groups (Jackman, 1994). They are often blamed for discriminating against disadvantaged groups (i.e., 'stigma reversal'; Killian, 1985) and subjected to stereotypes that portray them as cold and bigoted (Fiske et al., 2007). These group-specific threats lead to divergent needs for empowerment among members of disadvantaged groups and for acceptance among members of advantaged groups, respectively. Illustrating these needs, Black and Latinx[22] participants of a study conducted in the United States (disadvantaged-group members) especially wanted to be respected and perceived as competent by their White interaction partners compared to same-race partners. In contrast, White participants (advantaged-group members) were especially motivated to be liked by their Black and Latinx interaction partners compared to same-race partners (Bergsieker, Shelton, & Richeson, 2010).

Need Satisfaction Among Disadvantaged-group Members

Why is intergroup contact negatively associated with support for social change among disadvantaged groups? Research on support for social change, such as collective action, has shown that awareness of structural inequalities, feeling of injustice, and anger about disparities play critical roles in motivating people to engage in protest against social inequalities (Van Stekelenburg & Klandermans, 2013; Van Zomeren et al., 2008). Positive intergroup contact has been shown to negatively affect these predictors of support for social change (e.g., Carter et al., 2019; Dixon et al., 2007; Saguy et al., 2009; Van Zomeren, 2019). In contrast, negative intergroup contact has been shown to encourage support for social

[22] 'Latinx' is a gender-neutral word for people of Latin American descent.

change among disadvantaged groups (Reimer et al., 2017), which is more likely to occur during negative intergroup relations (Becker & Tausch, 2015; Wright & Lubensky, 2008). In other words, positive intergroup contact might draw attention away from inequalities, while negative intergroup contact could draw attention towards them. Thus, while negative intergroup contact might threaten social harmony, positive and intimate intergroup contact with a focus on commonalities might undermine the process that encourages support for social change among members of disadvantaged groups and perpetuate social inequalities (Dixon et al., 2010).

Drawing on the needs-based model, we theorized that the relations between intergroup contact and support for social change will be influenced by the extent to which group members' psychological needs are satisfied through contact. Positive and intimate intergroup contact with a focus on commonalities is not likely to satisfy disadvantaged-group members' need for empowerment. Furthermore, the so-called 'irony of harmony' effect suggests that intergroup contact with a focus on commonalities should undermine disadvantaged groups members' support for social change by drawing attention away from existing inequalities and increasing false expectations of equal treatment (Saguy et al., 2009). In contrast, 'empowering' intergroup encounters should satisfy the group-specific need among disadvantaged-groups (both at the individual and group level) and, in addition, target core predictors of support for social change (Van Zomeren, 2019). Accordingly, empowering contact might buffer against the detrimental effect of intergroup contact on support for social change among disadvantaged groups. In line with this reasoning, contact with an advantaged-group member who (i) clearly describes the group disparity as illegitimate (Becker, Wright, Lubensky, & Zhou, 2013), (ii) expresses support for social change (Droogendyk, Louis, & Wright, 2016; Techakesari, Droogendyk, Wright, Louis, & Barlow, 2015) or (iii) communicates status-based respect (Glasford & Johnston, 2017) increases or at least does not

appear to undermine support for social change. All of these types of intergroup contact can be interpreted as empowering. Consequently, in the presence—but not in the absence— of this empowering contact the otherwise negative effect of intergroup contact on support for social change among members of disadvantaged group might be counteracted or even reversed.

Need Satisfaction Among Advantaged-group Members

Why might intergroup contact encourage support for social change among advantaged groups? Positive contact has not only been shown to enhance trust (Hewstone, Cairns, Voci, Hamberger, & Niens, 2006) and empathy (Pettigrew & Tropp, 2008), but is also positively associated with advantaged-group members' anger over injustices experienced by disadvantaged groups (Selvanathan et al., 2018). All of these emotions can motivate members of advantaged groups to help the disadvantaged groups in their efforts for greater social equality. Hence, members of advantaged groups with more and better intergroup contact should provide greater support for social change.

Moreover, positive and intimate intergroup contact is likely to make advantaged-group members feel welcome and approved, which should satisfy their need for acceptance. 'Accepting' intergroup contact has been shown to increase advantaged-group support for social change (Shnabel et al., 2013). Consequently, while intergroup contact in general should be associated with support for social change among advantaged-group members, there should be an independent positive effect of satisfaction of the group specific-need for acceptance.

Compatibility and Boundary Conditions of Group-Specific Needs

We have argued that intergroup contact could be seen as a vehicle to promote social change to the extent that it simultaneously promotes the satisfaction of needs among and disadvantaged (i.e., empowerment) and advantaged groups (i.e., acceptance). This raises the question of the compatibility of conditions for satisfying empowerment and acceptance

needs. There is evidence that structured intergroup contact can indeed address both needs (Shani & Boehnke, 2017). Contact interventions, in turn, that satisfied both empowerment and acceptance needs should increase awareness of group inequalities and to raise support for social change among both disadvantaged and advantaged groups. Hence, intergroup encounters that empower disadvantaged-group members and reassure advantaged-group members' positive moral identity should encourage members of both groups to take collaborative action to strive for greater social equality while keeping social cohesion intact.

However, we assume that both members of disadvantaged and of advantaged groups should experience threats to their social identity only to the extent that they experience the group disparity to be illegitimate (Shnabel & Ullrich, 2013), which is not always the case. Structural inequalities are characterized by ambiguity with regard to the advantaged group's culpability (Galtung, 1969). Moreover, group disparities can be accounted for by different factors. Hence, some disadvantaged-group members may perceive the social arrangements as fair and just (Jost & Banaji, 1994; Sidanius & Pratto, 1999), may even feel guilty about their group membership, internalize their ingroup's inferiority, and reduce their willingness to engage in collective action (Becker & Wright, 2011; Calogero, 2013; Górska, Bilewicz, & Winiewski, 2017; Hässler, Shnabel et al., 2019; Ufkes, Calcagno, Glasford, & Dovidio, 2016). Similarly, this ambiguity may also allow advantaged-group members to deny, minimize, and legitimize their advantage (Leach et al., 2002) and even 'feel wronged', namely, wrongfully accused of treating the disadvantaged group unjustly (Saguy et al., 2013). Thus, we expected individual differences in the perceived illegitimacy of the group disparity to moderate the relationships between need satisfaction and support for social change.

Hypotheses

Consistent with our previous findings (Hässler, Ullrich et al., 2019), we hypothesized that (see Figure 10 for the regression model underlying all hypotheses):

Intergroup contact and support for social change are negatively related among members of disadvantaged groups, but positively related among members of advantaged groups. (Hypothesis 1)

The test of Hypothesis 1 differs from the previous reported bivariate correlation between intergroup contact and support for social change (Hässler, Ullrich et al., 2019). In the present research we also included need satisfaction and perceived illegitimacy (and their interaction terms). Consequently, we assessed the independent effect of intergroup contact on support for social change over and above need satisfaction and the proposed interactions between intergroup contact, need satisfaction, and perceived illegitimacy. However, we did not expect to find major differences between the bivariate correlation and the independent effect tested in the present paper.

Instead, the *main goal* of the present research concerns the subjective experience of contact as satisfying the group-specific need for empowerment or acceptance:

The higher the needs satisfaction within the contact experience (i.e., need for empowerment for members of disadvantaged groups and need for acceptance for members of advantaged groups), the higher the support for social change. (Hypothesis 2)

Whereas the first two hypotheses specify additive effects, we also expected group-specific needs satisfaction and intergroup contact to interact (see also Equation 1 in the analytic section). Among disadvantaged groups, we expected that the association between intergroup contact and support for social change would be negative when satisfaction of the need for empowerment is low (i.e., consistent with the 'irony of harmony' effect, Saguy et al., 2009) but less negative or positive when satisfaction of the need for empowerment is high (consistent with Becker et al.'s [2013] findings about 'supportive contact'). Among advantaged groups, we expected that the strength of the positive association between

intergroup contact and support for social change would be enhanced by the extent to which advantaged-group members feel accepted during contact. Hence, we hypothesized that:

The higher the needs satisfaction (i.e., need for empowerment for members of disadvantaged groups and need for acceptance for members of advantaged groups), the more positive (or less negative) the relationship between intergroup contact and support for social change (interaction between needs satisfaction and intergroup contact). (Hypothesis 3)

Our next hypothesis was based on previous findings that disadvantaged group members' need for empowerment and advantaged group members' need for acceptance are particularly pronounced when they perceive the status inequality as illegitimate (Siem, von Oettingen, Mummendey, & Nadler, 2013; see also Hässler, Shnabel et al., 2019). A logical derivation of this is that any predicted relations involving need satisfaction (i.e., the ones predicted in Hypotheses 2 and 3) should be stronger the greater is the perceived illegitimacy of status differences. We expected that the direct effect of need satisfaction on support for social change should be moderated by perceived illegitimacy:

The effect of need satisfaction on support for social change (specified in Hypothesis 2) should be stronger the greater is the perceived illegitimacy (interaction between needs satisfaction and perceived illegitimacy). (Hypothesis 4)

In addition, we expected that the interaction between intergroup contact and need satisfaction on support for social change should be moderated by perceived illegitimacy:

The moderating influence of need satisfaction on the effect of intergroup contact on support for social change (specified in Hypothesis 3) should be stronger the greater the perceived illegitimacy is (three-way interaction between intergroup contact, need satisfaction, and perceived illegitimacy). (Hypothesis 5)

We preregistered all five hypotheses (see Figure 10) as well as our analytic strategy (see https://osf.io/6hfcu/).

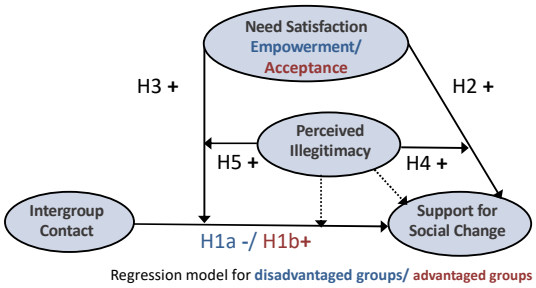

Figure 10. Overview of the regression model underlying all a priori hypotheses.

The Present Study

Extending our first report of the results of the ZIP which focused on bivariate correlations between intergroup contact and support for social change, the present paper analyzes the simultaneous additive and multiplicative effects of intergroup contact, need satisfaction, and perceived illegitimacy on support for social change. Based on our considerations above, we tested the incremental effect of need satisfaction on support for social change over and above the effect of intergroup contact and perceived illegitimacy (i.e., controlling for these constructs and their interactions) separately for all four populations. In addition, we also assessed the postulated interaction effects.

Please recall that in previous research, different researchers have conceptualized and operationalized intergroup contact, need satisfaction, perceived illegitimacy, and support for social change in substantially different ways, resulting in considerable heterogeneity of methods across studies. In the ZIP all researchers of our collaboration included the same measures capturing different forms of intergroup contact, needs satisfaction, perceived illegitimacy, and support for social change, so that we could test the postulated model using comparable methods and procedures. In addition, we followed advice to conduct *all* of the planned analyses at once applying specification curve analyses (Simonsohn et al., 2019; Steegen, Tuerlinckx, Gelman, & Vanpaemel, 2016). This allowed us to increase transparency

and to test for systematic effects of different operationalizations on the results.

Method

Participants

We used the ZIP dataset. There are two important differences between the sample used in the previous publication (Hässler, Ullrich et al., 2019) and the sample used for the present research. In the present research, (i) we included only samples with at least 100 usable participants following our preregistration and (ii) since need satisfaction was measured during intergroup contact, we had to exclude participants who reported not having any intergroup contact. Therefore, we ended up with 62 convenience samples, including 11,211 participants from 23 countries (see Figure S1 for inclusion criteria). In total, 689 ethnic minority group members (284 male, 402 female, 1 other, 2 NA, M_{age} = 29.20, SD_{age} = 11.09), 3,382 LGBTIQ+ individuals (1,221 male, 1,839 female, 322 other, M_{age} = 30.35, SD_{age} = 12.65), 2,937 ethnic majority group members (983 male, 1,942 female, 13 other, M_{age} = 28.31, SD_{age} = 11.23), and 4,203 cis-heterosexuals (1,289 male, 2,914 female, M_{age} = 28.90, SD_{age} = 12.47) were included (see Table S20 for ethnic minorities and majorities, Table S21 for LGBTIQ+ individuals/ cis-heterosexuals, Table S22 for the sample composition [LGBTIQ+ individuals]).

Measures

All researchers used parallel survey items for each of the four populations. We included an array of commonly used measures of all four constructs (see Table 7 and Table S20 for an overview of included constructs and [example] items)[23]. We included different types of intergroup contact (e.g., quantity vs. quality) and different behaviors commonly used to measure support for social change. In addition, we assessed two new measures reflecting

[23] All questionnaires contained additional measures not reported in this paper. The questionnaires can be found online on https://osf.io/uv7aq/.

important theoretical constructs in the literature on support for social change: raising ingroup awareness (Van Stekelenburg & Klandermans, 2013) and working in solidarity with the outgroup (Droogendyk, Wright, Lubensky, & Louis, 2016; Subašicet al., 2008). Further, we assessed satisfaction of the empowerment need and of the acceptance need at the individual and the group level. Finally, we assessed perceived illegitimacy with one measure capturing context-specific system justification (recoded) and one measure capturing perceived legitimacy of group differences (recoded).

Confirmatory factor analysis (see Figure S2 for procedure) justified using the same eight intergroup contact scales and five support for social change scales for all four populations except for contact reported by LGBTIQ+ individuals where we used only six intergroup contact scales (Table 7, see Table S23 for a detailed overview and Tables S24 and S25 for descriptive statistics)

As postulated in the preregistration, the actual number of items and measures per construct depended on the results of the CFA (Figure S1 gives an overview of the procedure). Except for quantity of contact (which was not included among LGBTIQ+ individuals), the final scales and items were identical across the four populations and were assessed on a 7-point-Likert scale (1 = *strongly disagree*, 7 = *strongly agree*; see Table S3 for a detailed overview of the final set of scales and items). Scale scores were derived by averaging the responses to the individual scale items. In addition, we included two items as an attention check, e.g., 'Attention check: When you have read this item, please select the second point on the scale (to the right of *'Strongly disagree'*)'. All participants who selected a wrong answer at least once were considered as failing the attention check.

Table 7
Overview of Constructs, Measures, and Example Items

Construct: **INTERGROUP CONTACT**	
Measures:	***Example Items:***
1) Quantity of contact†	How many [outgroup people[24]] do you know, at least as acquaintances?
2) Positive contact	When you interact with [outgroup], to what extent do you experience the following: The contact is friendly?
3) Absence of negative contact	When you interact with [outgroup], to what extent do you experience the following: The contact is unfriendly? (recoded)
4) Number of outgroup friends	How many of your friends are [outgroup]?
5) Frequency of meeting outgroup friends	How often do you meet your [outgroup] friends?
Construct: **GROUP-SPECIFIC NEED SATISFACTION**	
Measures:	***Example Items:***
1) Individual level – empowerment [disadvantaged groups]	I felt that [outgroup] with whom I had contact listened to what I had to say.
2) Group level – empowerment [disadvantaged groups]	I felt that [outgroup] with whom I had contact listened to what [ingroup] had to say.
1) Individual level – acceptance [advantaged groups]	I felt welcomed and accepted by outgroup-member with whom I had contact.
2) Group level – acceptance [advantaged groups]	Contact with [outgroup] left me with the impression that [ingroup] is welcomed and accepted by [outgroup].
Construct: **PERCEIVED ILLEGITIMACY**	
Measures:	***Example Items:***
1) System justification (recoded)	The [respective country] society is set up so that [advantaged group] and [disadvantaged group] usually get what they deserve.
2) Legitimacy of group differences (recoded)	1) I think the advantages of [advantaged group] compared to [disadvantaged group] are legitimate.
Construct: **SUPPORT FOR SOCIAL CHANGE**	
Measures:	***Example Items:***
1) Low cost collective action	Signing an online/regular petition to support action against the unequal treatment of [disadvantaged group].
2) High cost collective action	Attending demonstrations, protests or rallies against the unequal treatment of [disadvantaged group].
3) Support for empowering policies	[Disadvantaged group] should obtain much more power in the decision-centers of our society.
4) Raising ingroup awareness	When I come into contact with ingroup members, we talk about injustices in society regarding [disadvantaged group].
5) Working in solidarity	How willing are you to unite with [outgroup] to work for justice for [disadvantaged group]?

Note: †Quantity of contact and quantity of indirect outgroup friends were not included among LGBTIQ+ individuals because almost every LGBTIQ+ individual has more cis-heterosexual friends than 10 (i.e., the highest scale value) or LGBTIQ+ friends who have more than 10 cis-heterosexual friends.

[24] The in- and outgroup were adapted to the specific in- and outgroups in each context.

Results

Descriptive Statistics

The descriptive statistics for disadvantaged and advantaged populations can be found in Table S24 and S25, respectively. With few exceptions, the means of all scales were above the mid-point of the scale. The exceptions were the advantaged groups' means of raising ingroup awareness of inequality, ethnic majorities' high cost collective action, and advantaged groups' number of outgroup friends, which were all below the mid-point of the scale. Consequently, participants from all four populations reported high levels of intergroup contact; the only exception was that ethnic majorities and cis-heterosexuals reported having rather few outgroup friends. In addition, participants from all four populations reported high need satisfaction during intergroup contact, perceived group disparities in the respective context to be illegitimate, and were in general supportive of social change (the only exceptions to this are (i) that both advantaged groups were rather unwilling to raise ingroup awareness of inequalities and (ii) that ethnic majorities were unwilling to engage in high cost collective action). Importantly, members of disadvantaged groups compared to members of the context-specific advantaged groups reported higher support for social change on all assessed measures.

Analytic Strategy

This study follows a preregistered analysis plan (see Table S27 for deviations) stored along with the questionnaires, data, and code at: https://osf.io/mdngf/?view_only=81fdd2dccb5c4b319033a83183eb48b5. Figure S2 gives an overview of the analytic procedure.

First, because our data consists of 62 international samples, we regressed the original items on the subsample identifier variable to obtain residualized item scores. This was done to ensure that we would test the postulated model at the level of individuals rather than at the

level of subsamples or countries (item level sample mean-residualization). Next, we used confirmatory factor analyses to select the final set of items and scales (see Table S23). Since we observed strong correlations between the measures of satisfaction of acceptance and empowerment needs in all populations (see Tables S24 for disadvantaged groups and S25 for advantaged groups), we decided to deviate from the preregistration by using residualized versions of the need satisfaction variables (needs-residualization, in each case controlling for the other need). This enabled us to conduct a more accurate test of the effect of satisfaction of the group-specific need on support for social change.

Please note that our main novel contribution was to assess the independent effect of group-specific need satisfaction on support for social change (Hypothesis 2) over and above the effect of intergroup contact. We assumed that participants should experience threats to their morality (advantaged groups) or their power (disadvantaged groups) only to the extent that they experience the group disparity to be illegitimate (Shnabel & Ullrich, 2013) and that the perception of this illegitimacy should differ between individuals. Therefore, we also controlled for perceived illegitimacy and the interaction terms between intergroup contact, need satisfaction, and perceived illegitimacy. This means that we tested the independent effect of need satisfaction (NS) on support for social change (SSC) [coefficient b_2 in Equation 1] over and above the effect of intergroup contact (IC) and perceived illegitimacy (PI) [i.e., controlling for these constructs and their interactions] separately for all four populations.

$$SSC_{ij} = b_0 + b_1IC_i + b_2NS_i + b_3PI_i + b_4IC_ixNS_i + b_5IC_i{\times}PI_i + b_6NS_i{\times}PI_i + b_7IC_i{\times}NS_i{\times}PI_i.$$

In addition, we also tested for the independent effect of intergroup contact on support for social change and all postulated interactions. We z-transformed all variables before computing the interactions. Thus, the regression coefficients can be interpreted as standardized regression coefficients. Finally, we used specification curve analysis

(Simonsohn et al., 2019) to estimate the specified regression model conditional on all measurement choices.

Specification Curve Analysis

Specification curve analyses enabled us to run *all* analyses that seemed plausible a priori (Simonsohn et al., 2019). We simultaneously estimated the magnitude of the regression coefficients for each hypothesis using every combination of available measures. In addition, we tested the impact of two analytic decisions typically faced by survey researchers: whether to exclude or include (1) statistical outliers and (2) participants who failed the attention check. Note that the preregistration document defined statistical outliers as participants who deviated 3 times the interquartile range from the median of the distribution of any variable included in the model specification. Combining these six model specification factors in a full factorial design (Table 8) —5 [4 for LGBTIQ+ individuals, see Table 7] (contact measures) × 5 (support for social change measures) × 2 (group-specific need satisfaction) × 2 (perceived illegitimacy) × 2 (attention check failures included/excluded) x 2 (outliers included/excluded) — results in 400 [320 for LGBTIQ+ individuals] model specifications. Thus, summing over the four populations, there were 1520 opportunities to test each hypothesis.

First, for each of the five hypothesis we conducted an *individual* significance test for each single model specification for a given population. We performed one-tailed tests using an alpha of .05 in line with our preregistered directional hypotheses. Next, we conducted a *joint* significance test (Figure S3; Simonsohn et al., 2019) for each of the four populations. Considering results of *all* 400 [320] model specifications for a given population at once, this *joint* significance test indicates whether the null hypothesis (i.e., none of the correlations are different from zero) should be rejected for the respective hypothesis. Using a permutation technique, we calculated the rate of obtaining the observed number of significant effects by

Table 8
Overview of Model Specifications

Specification Factor I Measure of Intergroup Contact	**Specification Factor II** Measure of Support for Social Change	**Specification Factor III** Group-Specific Need Satisfaction (NS)	**Specification Factor IV** Perceived Illegitimacy (PI)	**Specification Factor V** Attention Check Failures (ACF)	**Specification Factor VI** Outliers (O)
1. Quantity of contact† 2. Positive contact 3. Absence of negative contact 4. Number of outgroup friends 5. Frequency of meeting outgroup friends 6. Quantity of indirect outgroup friends† 7. Positive indirect contact 8. Absence of negative indirect contact	1. Low cost collective action 2. High cost collective action 3. Support for empowering policies 4. Raising ingroup awareness 5. Working in solidarity	1. Specific group need – individual level 2. Specific group need – group level	1. System justification (recoded) 2. Legitimacy of group differences (recoded)	1. Excluded 2. Not excluded	1. Excluded 2. Not excluded
Sum of final plausible specifications: 5 [4 among LGBTIQ+ individuals] IC ×5 SSC × 2 NS × 2 PI × 2 ACF × 2 O = 400 specifications [320 among LGBTIQ+ individuals)					

Note: †: not included among LGBTIQ+ individuals.

chance (if the null hypothesis was true) by shuffling the data set 1,000 times. We rejected the null hypothesis when this likelihood was less than .05.

To examine in more detail how results depend on model specification, we visually inspected the specification curves. In addition, we regressed the regression coefficient for each model specification on our six model specification factors: intergroup contact measures, support for social change measures, group-specific need satisfaction measures, perceived illegitimacy measures, attention check failures included/excluded, and outliers included/excluded (Tables S26A-E). This meta-regression allowed us to quantify the influence of using a specific measure or analytic decision on the regression coefficient.

Table 9 shows the number of significant results for each hypothesis that were in the predicted direction among the 400 model specifications postulated for all populations (LGBTIQ+ individuals: 320 model specifications) and the corresponding *p*-values from the joint significance test.

All steps of the specification curve analysis can be reproduced with the Master_Spec.R and the underlying Functions_Spec.R script. The files and the aggregated dataset underlying the specification curve analysis, as well as the corresponding codebook can be found online (https://osf.io/mdngf/?view_only=81fdd2dccb5c4b319033a83183eb48b5).

Results and Discussion: Disadvantaged-Groups

Specification Curve: Confirmatory Analyses. We assumed that the independent effect of intergroup contact on support for social change would reveal results similar to the previously reported bivariate correlation between intergroup contact and support for social change (Hässler, Ullrich et al., 2019). However, there are two major differences between the regression coefficient underlying this more complex regression model and the previously reported bivariate correlation: (i) here we control for need satisfaction, perceived illegitimacy, and the two- and three-way interactions between intergroup contact, need satisfaction, and perceived illegitimacy and, therefore, (ii) we could not include indirect contact since need satisfaction was measured during intergroup encounters. Consistent with Hypothesis 1 and in line with the results of the previously reported bivariate correlation, we found robust evidence that over and above the effect of need satisfaction, perceived illegitimacy, and the interactions between all constructs, intergroup contact negatively predicted support for social change among both ethnic minorities and LGBTIQ+ individuals (see Table 9 for all results).

In line with Hypothesis 2, we found an independent positive effect of need satisfaction for empowerment. Hence, over and above the effects of intergroup contact, perceived illegitimacy, and the postulated interactions, needs satisfaction for empowerment was positively associated with support for social change among both ethnic minorities and LGBTIQ+ individuals.

The effects for the proposed interactions were less robust (see Table 9). The effects of intergroup contact and need satisfaction were only qualified by a two-way interaction among LGBTIQ+ individuals (Hypothesis 3). This implies that the negative relationship between intergroup contact and support for social change among LGBTIQ+ individuals was less pronounced the higher the need satisfaction during the contact situation was. Further, we found no evidence for the interaction between need satisfaction and perceived illegitimacy among both populations (Hypothesis 4). Finally, we only found evidence for the three-way interaction among LGBTIQ+ individuals and not for ethnic minorities (Hypothesis 5).

In sum, in line with the previously reported bivariate correlation (Hässler, Ullrich et al., 2019), we found strong and robust evidence for an independent negative effect of intergroup contact on support for social change. Thus, the more contact occurs between disadvantaged and advantaged-group members, and the more positively this intergroup contact is experienced, the lower is disadvantaged-groups' willingness to support social change. More importantly, over and above the effects of established measures of intergroup contact, we obtained evidence for a positive association between the new measures of empowering contact and support for social change.

Table 9
Joint Significant Tests for all 5 Hypotheses and all Four Populations

Hypothesis		**Context**			
		Ethnic Minorities	LGBTIQ+ Individuals	Ethnic Majorities	Cis-Heterosexuals
H1		Negative relationship between contact and support for social change.		Positive relationship between contact and support for social change.	
	Effect Size	median β = -.04 (-.28, .18)	median β = -.05 (-.25, .17)	median β = .15 (.01, .47)	median β = .24 (.01, .41)
	Share of significant results	148/400	199/320	388/400	396/400
	p-Values	<.001	<.001	<.001	<.001
H2		Positive relationship between satisfaction of need for acceptance/empowerment and support for social change.			
	Effect Size	median β = .04 (-.14, .19)	*median* β = .04 (-.08, .11)	median β = .04 (-.14, .20)	median β = .05 (-.08, .17)
	Share of significant results	98/400	187/320	205/400	273/400
	p-Values	.024	.001	.003	.001
H3		The higher the needs satisfaction (i.e., need for acceptance for members of advantaged groups and need for power for members of disadvantaged groups), the more positive (or less negative) the relationship between contact and support for social change.			
	Effect Size	median β =.03 (-.08, .13)	median β = .01 (-.03, .08)	median β = -.01 (-.09, .09)	median β = -.01 (-.09, .05)
	Share of significant results	49/400	48/320	33/400	4/400
	p-Values	.058	.036	.193	.793
H4		The effect of need satisfaction on support for social change (i.e., Hypothesis 2) should be stronger, the greater the perceived illegitimacy.			
	Effect Size	median β = -.02 (-.14, .08)	median β = -.01 (-.10, .05)	median β = .01 (-.07, .12)	median β = .00 (-.06, .05)
	Share of significant results	8/400	11/320	91/400	62/400
	p-Values	.630	.531	.020	.072
H5		The moderating influence of need satisfaction on the effect of intergroup contact on social change (i.e., Hypothesis 3) should be stronger, the greater the perceived illegitimacy.			
	Effect Size	median β = -.02 (-.15, .13)	median β = .01 (-.12, .08)	median β = .00 (-.06, .07)	median β = .00 (-.08, .07)
	Share of significant results	22/400	60/320	67/400	95/400
	p-Values	.374	.007	.014	.002

Note: p-Values: % of shuffled samples with as or more extreme results as specification curve

Understanding the Variability of Results among Disadvantaged Groups. In this section, we briefly describe the main findings for the independent intergroup contact on support for social change (Hypothesis 1; see also Hässler, Ullrich et al., 2019 for detailed discussion of the bivariate correlation). Next, we plot the underlying specification curves underlying our novel contribution: the independent effect of satisfaction of the empowerment need on support for social change (Hypothesis 2). The specification curves underlying the independent effects of intergroup contact (Hypothesis 1) and all empirically supported interactions (Hypothesis 3-5) can be found in the supplementary materials (see Figures S4-7). The descriptive specification curve allowed us to systematically assess which measures produced smaller or larger effects.

Intergroup Contact and Support for Social Change. In line with the results of the previously reported bivariate correlation between intergroup contact and support for social change (Hässler, Ullrich et al., 2019), the only positive effects were found for the dependent variable *working in solidarity*, while we found negative effects for all other variables. The negative effects were most pronounced for *high cost collective action* and *raising ingroup-awareness*. Again, also for this more complex model, especially *positive contact*, *absence of negative contact*, and *number of outgroup friends* were associated with decreased support for social change.

Satisfaction of Group-specific Need and Support for Social Change. The top of Figure 11 and Figure 12 show the sorted effects (regression coefficients) of group-specific needs satisfaction for empowerment on support for social change, along with confidence intervals for the population value. The bottom indicates the model specification underlying each effect. For example, the model specification that produced the largest positive effect between group-specific need satisfaction and social change among ethnic minorities (on the

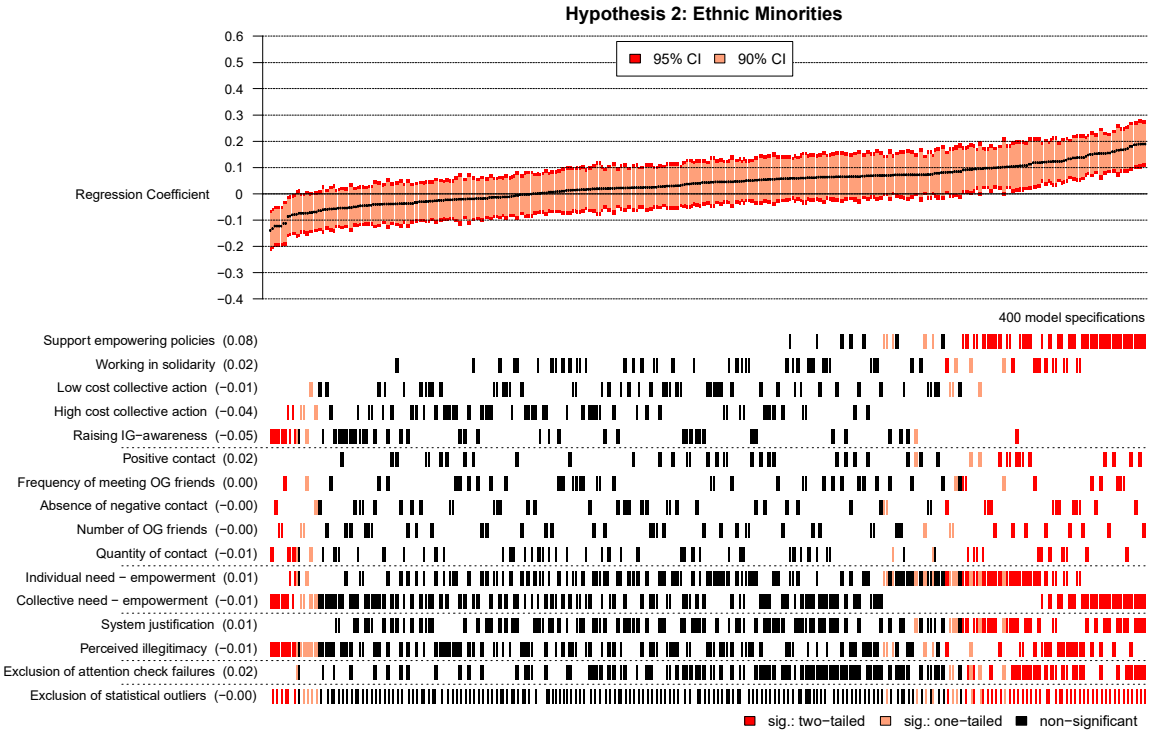

Figure 11. Results of the specification-curve analysis showing the effect of satisfaction of the group-specific need for empowerment on support for social change among ethnic minorities (n = 689).

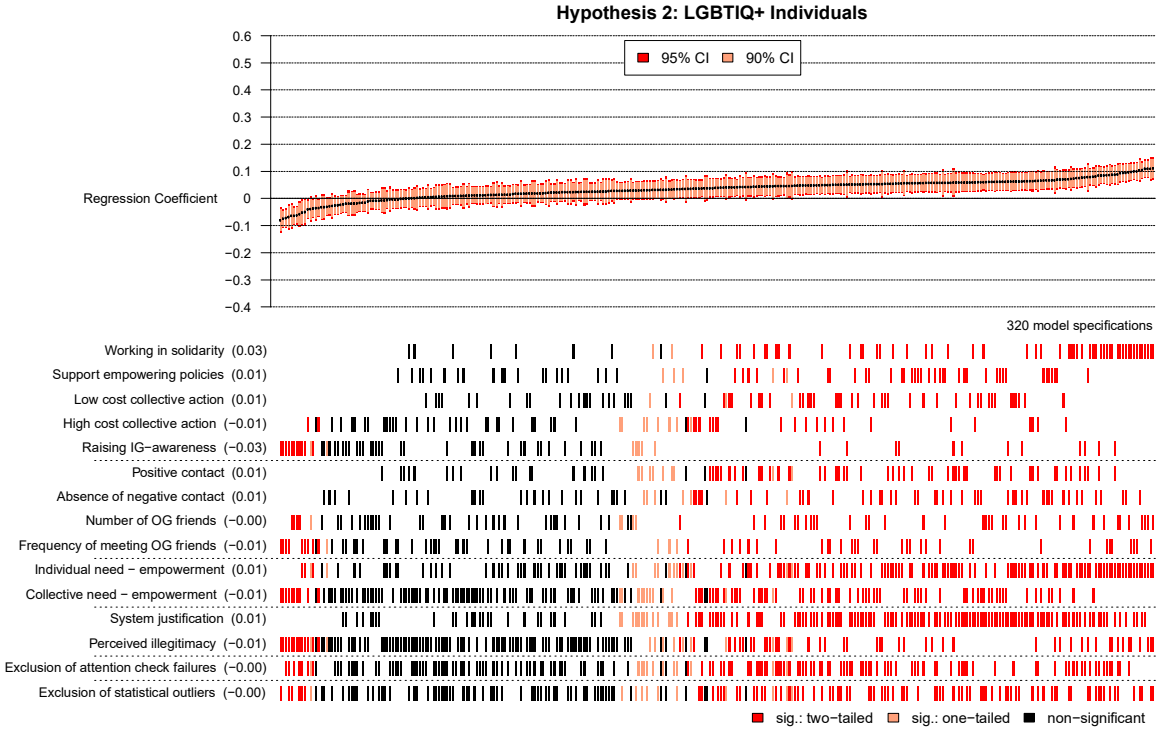

Figure 12. Results of the specification-curve analysis showing the effect of satisfaction of the group-specific need for empowerment on support for social change among LGBTIQ+ individuals (n = 3,382).

far right of Figure 11) includes *support for empowering policies* as a measure of support for social change, in combination with *group-level need satisfaction* as measure of group-specific need satisfaction for empowerment, controlling for *number of outgroup friends* as measure of intergroup contact and for *system justification* as measure of perceived illegitimacy. Further, participants who failed the *attention check* and *statistical outliers* were excluded.

Visual examination of Figure 11 and Figure 12 reveals that the vast majority of the effects of satisfaction of the need for empowerment on support for social change were positive among both disadvantaged groups. However, we found a considerable variation of effect sizes depending on model specification, ranging from b = -.14 to b = .19 (median b = .04) among ethnic minorities and from b = -.08 to b = .11 (median b = .04) among LGBTIQ+ individuals (see Table 9). Hence, we found support for the assumption that empowering can buffer against otherwise detrimental effects of intergroup contact, effect sizes were rather small.

The coefficients shown in parentheses in Figure 11 and Figure 12 represent the predicted change in effect sizes (relative to the grand mean of effect sizes) resulting from using one particular measure or analytic decision (see Table S26 for individual significance tests). Among disadvantaged-group members, the satisfaction of the need for empowerment was particularly positively associated with the dependent variables *support for empowering policies* (especially among ethnic minorities) and *working in solidarity* (especially among LGBTIQ+ individuals). In contrast, almost all significant negative effects were produced by specifications including *raising ingroup-awareness.*

Additional Follow-Up Analyses for Satisfaction of Group-Nonspecific Need. To understand whether the satisfaction of the group-specific need for empowerment during contact is essential or whether any kind of need satisfaction is positively associated with

support for social change, we ran an exploratory specification curve analysis for satisfaction of the non-group-specific need for acceptance. *Figure 13* and Figure 14 show the specification curves for all the effects of satisfaction of the group-non-specific need for acceptance on support for social change among ethnic minorities and LGBTIQ+ individuals. Satisfaction of the need for acceptance was negatively associated with support for social change in the majority of specifications (two-sided joint-significant test $p < .001$). Effect sizes ranged from $b = -.29$ to $b = .11$ (median $b = -.10$) among ethnic minorities and from $b = -.19$ to $b = .04$ (median $b = -.08$) among LGBTIQ+ individuals.

The specific measure of support for social change used in the model specification determined the size and direction of the effects, for both ethnic minorities and LGBTIQ+ individuals. The largest negative effect sizes between satisfaction of the group-non-specific need for acceptance and support for social change resulted from model specifications including *raising ingroup-awareness*. By contrast, positive effects were almost exclusively produced by *working in solidarity*. These results mirror the effects that we found for the association between intergroup contact and support for social change (Hässler, Ullrich et al., 2019). Further, the satisfaction of the need for acceptance at the *individual level* produced slightly stronger negative effects.

Conclusion. In sum, our results clearly demonstrate the key role that satisfaction of need for empowerment during intergroup contact plays for disadvantaged-group members' fight for social equality. While intergroup contact was negatively associated with support for social change, satisfaction of group-specific need for empowerment during intergroup contact was positively associated with support for social change. In contrast, satisfaction of group-non-specific need for acceptance was negatively associated with support for social change and, therefore, amplified the negative effect of intergroup contact on support for social

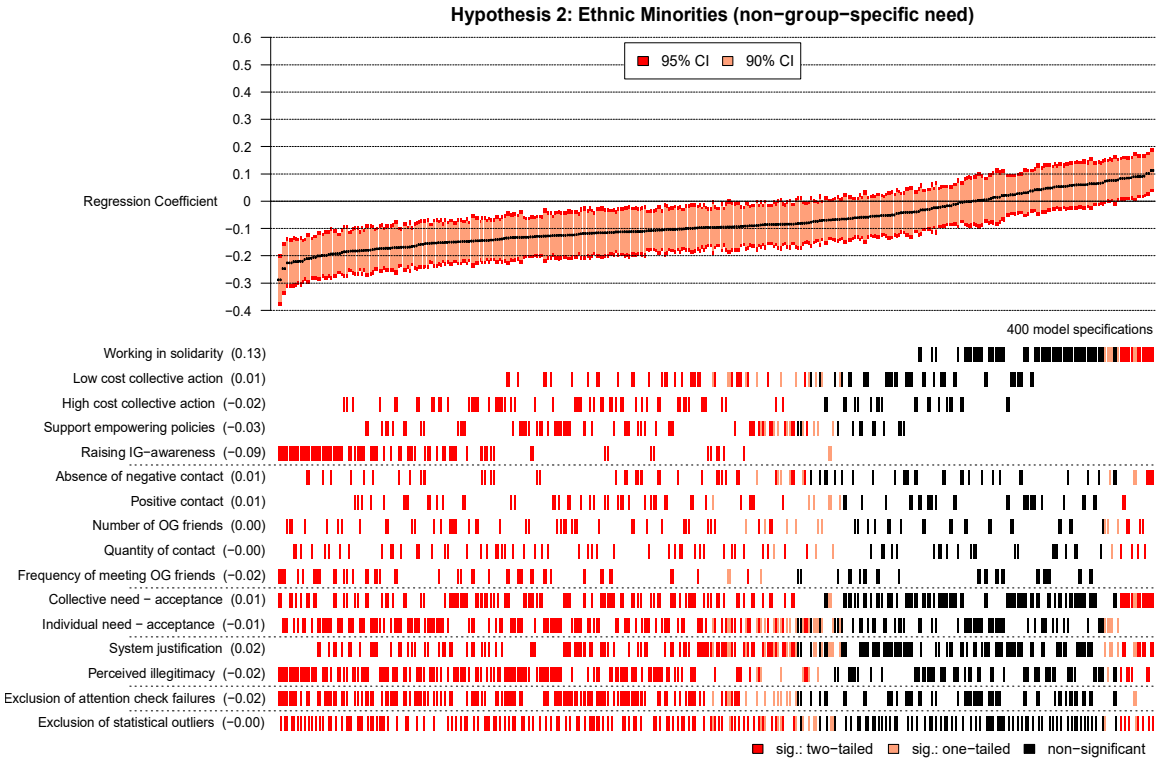

Figure 13. Results of the specification-curve analysis showing the effect of satisfaction of the non-group-specific need for acceptance on support for social change among ethnic minorities (n = 689).

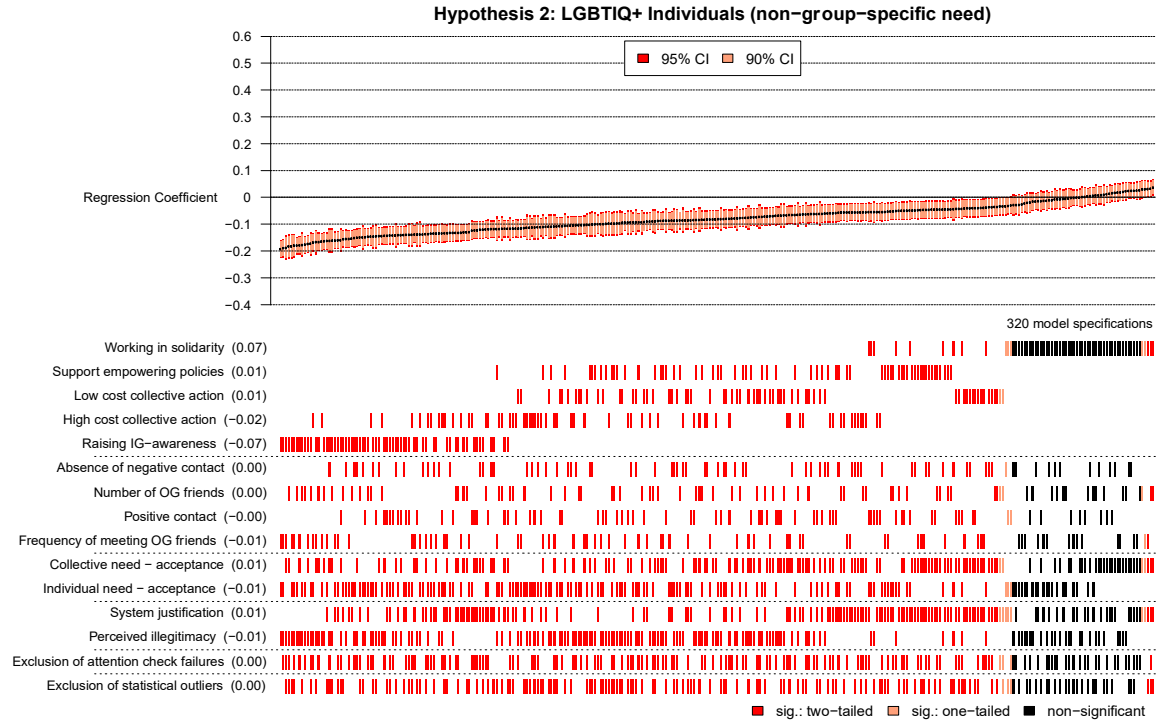

Figure 14. Results of the specification-curve analysis showing the effect of satisfaction of the non-group-specific need for acceptance on support for social change among LGBTIQ+ individuals (n = 3,382).

change. These results are consistent with research showing that intergroup contact that is communal but does not address structural inequalities (which is likely the case for accepting contact) can reduce support for social change among members of disadvantaged groups (Saguy et al., 2009).

Despite the robust evidence for the overall positive effect of satisfaction for the need for empowerment on support for social change, we also found systematic variation in effects. Satisfaction of the need for empowerment seems to fail to promote the two behaviors that are especially discouraged by intergroup contact – namely *raising ingroup-awareness* and *high cost collective action.* Indeed, almost all negative effects found among both ethnic minorities and LGBTIQ+ individuals were produced by the dependent variable *raising ingroup-awareness*. In addition, *high cost collective action* produced many non-significant effects among both disadvantaged groups – among ethnic minorities we found not even a single positive effect that turned significant.

In addition, *willingness to work in solidarity* was the only dependent variable that was positively associated with satisfaction of the non-group-specific *and* group-specific need. This emphasizes once more the unique role of *willingness to work in solidarity*, which was also the only dependent variable that was positively associated with intergroup contact.

In sum, if disadvantaged-group members aim to encourage not only willingness to work in solidarity but aim to promote a wider range of behaviors related to support social change toward greater equality, it seems essential that intergroup contact is not simply experienced as pleasant in nature but also empowers disadvantaged groups. Yet, even empowering intergroup contact might not be sufficient to encourage disadvantaged-group members to raise awareness about inequalities and to engage in high cost collective action.

Results and Discussion: Advantaged-Groups

Specification Curve: Confirmatory Analyses. We found robust evidence for our postulated main effects (see Table 9). Consistent with Hypothesis 1 and in line with the results of the previously reported bivariate correlation, we found an independent positive effect of intergroup contact on support for social change among both ethnic majorities and cis-heterosexuals. In addition, over and above the effects of intergroup contact, satisfaction of the need for acceptance had an independent positive effect on support for social change among both ethnic majorities and cis-heterosexuals (Hypothesis 2).

The results for the postulated interaction effects were less robust (see Table 9). We found no evidence that the direct effects of intergroup contact and need satisfaction were qualified by a two-way interaction (Hypothesis 3). Further, we only found support for the interaction between need satisfaction and perceived illegitimacy among ethnic majorities (Hypothesis 4). For ethnic majorities, the effect of contact on support for social change seemed to be stronger the greater the perceived illegitimacy. Finally, we found evidence for the three-way interaction among both ethnic majorities and cis-heterosexuals (Hypothesis 5).

In sum, in line with the previously reported bivariate correlation (Hässler, Ullrich et al., 2019), we found strong and robust evidence that intergroup contact was positively associated with advantaged-groups' support for social change. Additionally, we found novel and robust evidence of an independent positive effect of satisfaction of the group-specific need for acceptance.

Understanding the Variability of Results among Advantaged Groups. We briefly describe the main findings for the independent intergroup contact on support for social change (Hypothesis 1; see also Hässler, Ullrich et al., 2019 for detailed discussion of the bivariate correlation). Next, to systematically assess which measures produced smaller and larger effects, we plotted the descriptive specification curves for our novel contribution: the

independent effects of satisfaction of the acceptance need on support for social change (Hypothesis 2). The specification curves underlying the independent effects of intergroup contact (Hypothesis 1) and all reported interactions (Hypothesis 3-5) can be found in the supplementary materials (see Figures S4-7).

Intergroup Contact and Support for Social Change. In line with the results of the previously reported bivariate correlation between intergroup contact and support for social change (Hässler, Ullrich et al., 2019), all combinations of measures for intergroup contact and support for social change produced positive effects. Moreover, we found variation in regression coefficients: *working in solidarity* led to the most positive effects, while *raising ingroup-awareness* was generally associated with the smallest effects.

Satisfaction of Group-specific Need and Support for Social Change. Figure 15 and Figure 16 show the specification curves for all the effects of satisfaction of the group-specific need for acceptance on support for social change among ethnic majorities and cis-heterosexuals. Visual examination reveals variation in effect sizes among advantaged groups. The effect of group-specific need satisfaction on support for social change ranged from b = -.14 to b = .20 (median b = .04) among ethnic majorities and from b = -.08 to b = .17 (mean b = .05*)* among cis-heterosexuals. In fact, despite the overall support for the predicted positive effect, we also observed some negative effects. Figure 15 and Figure 16 suggests that the size and direction of the effects vary both with the type of predictor variable and the dependent variable. Among ethnic majorities and cis-heterosexuals, negative effects were exclusively associated with the measure *raising ingroup awareness of inequality,* while all other dependent variables were almost exclusively associated with positive effects. With regard to the predictor variable, the largest positive effects were associated with *individual-level* need satisfaction rather than *group-level* need satisfaction. These results imply that satisfaction of the group-specific need for acceptance consistently positively predicted support for social

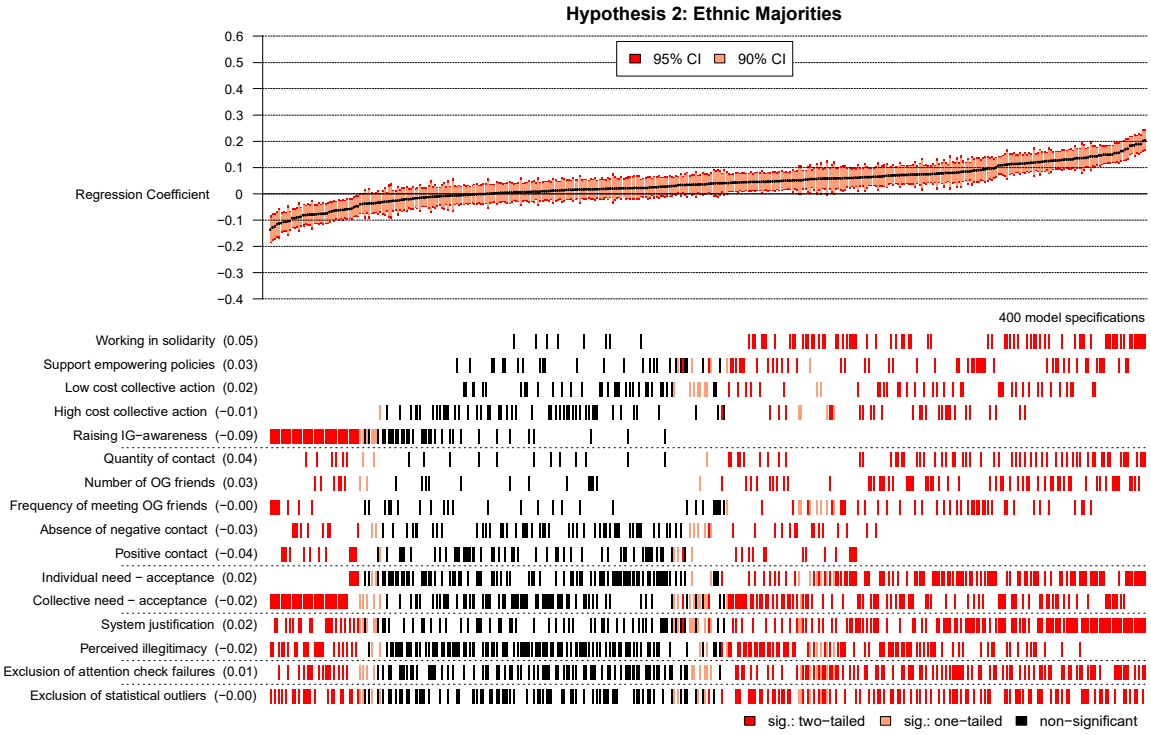

Figure 15. Results of the specification-curve analysis showing the effect of satisfaction of the group-specific need for acceptance on support for social change among ethnic majorities (n = 2,937).

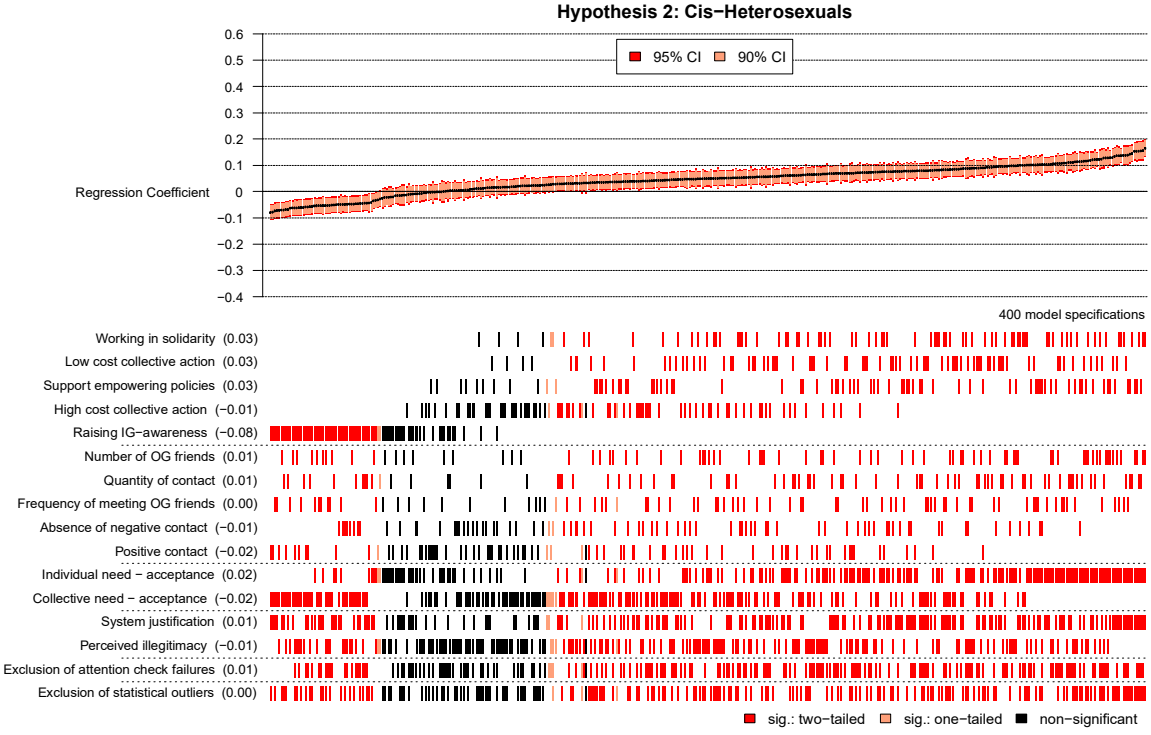

Figure 16. Results of the specification-curve analysis showing the effect of satisfaction of the group-specific need for acceptance on support for social change among cis-heterosexuals (n = 4,203).

change with one important exception: satisfaction of the acceptance need had a negative effect on *raising ingroup-awareness*.

Additional Follow-Up Analyses for Satisfaction of Group-Nonspecific Need. Finally, we plotted the specification curve for the satisfaction of non-group-specific need for empowerment among both advantaged populations. This allowed us to understand whether satisfaction of the group-specific need for acceptance is essential for solidarity-based support for social change.

Figure 17 and Figure 18 show the specification curves for all the effects of satisfaction of the group-non-specific need for empowerment on support for social change among ethnic majorities and cis-heterosexuals. Contrary to the results among both disadvantaged populations, we found that satisfaction of the non-group-specific need (i.e., for empowerment) was always positively associated with support for social change among ethnic majorities and cis-heterosexuals (two-sided joint-significant test $p < .001$). Effect sizes ranged from $b = .01$ to $b = .18$ (median $b = .10$) among ethnic majorities and from $b = .01$ to $b = .18$ (mean $b = .09$) among cis-heterosexuals. With regard to the dependent variable, the smallest effects were associated with the measure *raising ingroup awareness of inequality,* while the largest effects were found for *support for empowering policies*. Additional, *group-level* need satisfaction produced larger positive effects overall. This implies that satisfaction of the non-group-specific need for empowerment consistently positively predicted support for social change over and above the effect of intergroup contact.

Conclusion. In sum, our results clearly demonstrate that intergroup contact as well as satisfaction of both the group-specific need for acceptance and the group-non-specific need for empowerment were positively associated with support for social change. Interestingly, satisfaction of the group-specific need at the individual level (compared to group level)

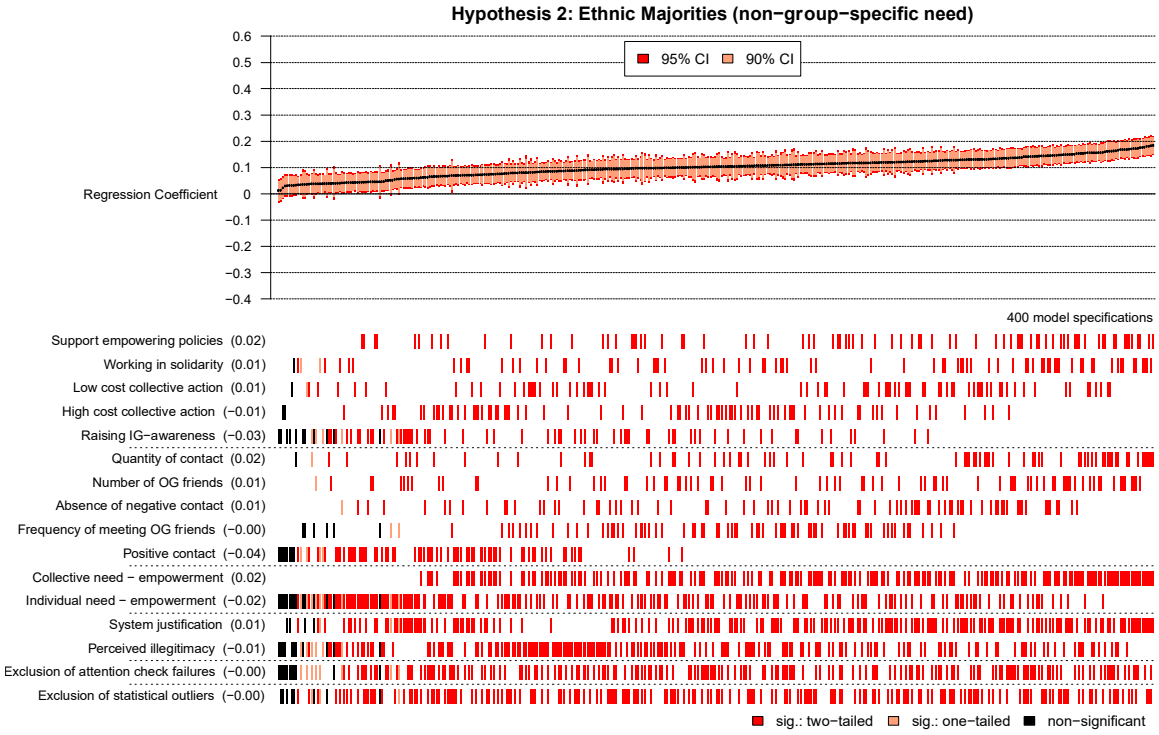

Figure 17. Results of the specification-curve analysis showing the effect of satisfaction of the non-group-specific need for acceptance on support for social change among ethnic majorities (n = 2,937).

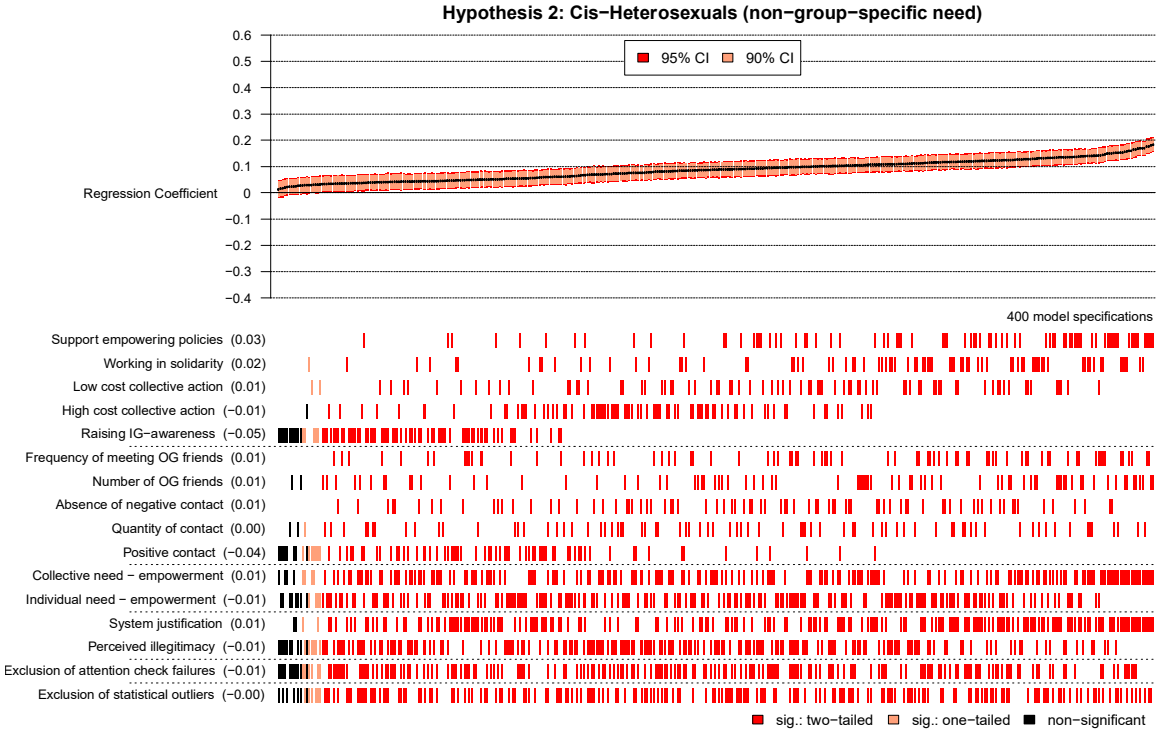

Figure 18. Results of the specification-curve analysis showing the effect of satisfaction of the non-group-specific need for acceptance on support for social change among cis-heterosexuals (n = 4,203).

produced slightly larger positive effects, while the opposite was true for satisfaction of the non-group-specific need.

In sum, intergroup contact seems to always encourage support for social change among advantaged groups. Moreover, our results suggest that for advantaged groups the distinction between group-specific (i.e. for acceptance) and non-group-specific (i.e., empowerment) needs seems to be less crucial – both needs seem to encourage support for social change over and above the effect of intergroup contact. In other words, regardless of the form of intergroup contact and the form of need satisfaction during these encounters, members of advantaged groups with more and better contact were more willing to engage in solidarity-based support for social change.

Despite this robust evidence, specification curve analysis allowed us to identify one type of support for social change, raising ingroup-awareness, that led to a different pattern compared to the other types of support for social change. Intergroup contact had minor positive effects on raising ingroup-awareness, satisfaction of the group-non-specific need for empowerment produced very small positive effects as well, and satisfaction of the group-specific need for acceptance produced even negative effects. This suggests that intergroup contact might not be sufficient to encourage advantaged-group members to address group disparities when interacting with their fellow ingroup members.

General Discussion

Our results inform the debate whether reaching social harmony and support for social change are incompatible goals. Previous research (Hässler, Ullrich et al., 2019) has shown that the relationship between intergroup contact and support for social change is negative among disadvantaged groups (i.e., ethnic minorities and LGBTIQ+ individuals), but positive among advantaged groups (i.e., ethnic majorities and cis-heterosexuals). In the present work, we build on these previous results to better understand how intergroup encounters must be

structured to encourage support for social change among members of disadvantaged and advantaged groups. Drawing on a needs-based approach, we offer a comprehensive answer to the research question: How does need satisfaction during intergroup contact encourage support for social change among advantaged and disadvantaged groups?

In line with our hypothesis, we found robust evidence that satisfaction of the group-specific need (i.e., acceptance among advantaged groups and empowerment among disadvantaged groups) had a positive effect on support for social change. Moreover, exploratory follow-up analyses revealed for both contexts that satisfaction of the group-non-specific need for empowerment was positively associated with support for social change among advantaged-group members, while satisfaction of the non-group-specific need for acceptance had negative effects on support for social change among disadvantaged-group members. Therefore, satisfaction of the group-specific need during intergroup contact seems to be sufficient but not necessary to encourage support for social change among advantaged-group members. In contrast, satisfaction of the group-specific need (i.e. empowerment) seems to be *necessary* to encourage support for social change among disadvantaged-group members.

In regard to the boundary conditions of group-specific needs, we assumed that both members of disadvantaged and advantaged groups should experience group-specific needs only to the extent that they experience the group disparity to be illegitimate (Shnabel & Ullrich, 2013) and that the perception of this illegitimacy should differ between individuals. In line with this reasoning, we expected an interaction effect between perceived illegitimacy and need satisfaction (Hypothesis 4). Contrary to our assumptions, we found weak evidence for the proposed interaction. One explanation for this finding be that the mean levels of perceived illegitimacy were so high among all four populations of interest (see Table S24 for disadvantaged groups and Table S25 for advantaged groups) that the interaction adds little to

the main effect (see also McClelland & Judd, 1993 for the difficulties in detecting interaction effects in non-experimental studies). Despite this null effect, perceived illegitimacy should not easily be dismissed as it has been shown in previous research to moderate the emergence of group-specific needs (Hässler, Shnabel et al., 2019) and to be a core predictor of support for social change (Van Zomeren et al., 2008). Further, living conditions and legal situations vary substantially between the assessed countries, which should affect perceived illegitimacy of group disparities. Even though this comprehensive study found little support for the interaction using the entire dataset, future research should systematically assess whether perceived illegitimacy moderates the association between intergroup contact and support for social change for countries with a lower average score on perceived illegitimacy.

How do the findings of our comprehensive study inform the debate whether intergroup contact comes at the price of discouraging disadvantaged-group members from demanding social equality? The independent, additive, and asymmetrical effects among disadvantaged-group members – negative effect for intergroup contact, positive effect for group-specific need satisfaction – suggest that the 'irony of harmony' effect can be buffered against to the extent that intergroup encounters satisfy group-specific needs for empowerment. Nonetheless, empowering contact might not outweigh the negative effects of intergroup contact on disadvantaged-group members' willingness to raise ingroup-awareness about inequalities and on their intentions to engage in high cost collective action. Furthermore, satisfaction of the non-group-specific need for acceptance even amplifies the negative effect of intergroup contact on support for social change. Consequently, empowering intergroup contact seems to be necessary to buffer against the irony of harmony effect but empowering contact alone seems not to be sufficient to actually encourage support for social change. Instead if the aim is to promote disadvantaged-group members' willingness to raise ingroup-awareness about inequalities and intentions for high cost collective action it

might be essential that intergroup encounters address power differences and inequalities more directly.

Moreover, a practical problem is that advantaged groups may not spontaneously provide the kind of intergroup contact that benefits support for social change among disadvantaged groups. Members of advantaged groups generally avoid discussions about group differences in power in intergroup encounters and prefer to talk about commonalities instead (Bergsieker et al., 2010; Saguy & Kteily, 2014). Talking about commonalities alone, however appears to be rather unlikely to satisfy the heightened need for empowerment. Further, research on intergroup interaction has found negative effects of intergroup interaction such as heightened threat perceptions, anxiety, and outgroup avoidance (MacInnis & Page-Gould, 2015), which might be intensified if group differences are emphasized too early. Therefore, a certain threshold of contact might be needed before intergroup contact can address empowerment needs – otherwise empowering contact might even unintentionally foster rather than reduce intergroup bias (see MacInnies & Hodson, 2019).

A strategy to shift conversation from communalities to differences and power-relations are so-called mixed-model encounters (Maoz, 2007). These structured intergroup contact interventions first emphasize commonalities and then switch the focus gradually to differences, power-relations, and inequalities. Therefore, these encounters should reassure advantaged-group members' positive moral identity and empower members of disadvantaged-groups by giving them a voice to express their situation. Structured contact interventions that not only empower members of disadvantaged groups but also address power differences and inequalities more directly, might be a powerful tool to bridge the division along group lines and increase support for social change among both groups (Shnabel & Ullrich, 2013; Shani & Boehnke, 2017).

Potential Objections and Future Research

There are some limitations to the present work that we wish to acknowledge. First, four out of five measures of support for social change assessed intentions rather than actual behavior. While intentions are reliable predictors of actual support for social change (Tausch et al., 2011), actual support might be lower (see also intention-implementation-gap; Dixon et al., 2007). Second, the high correlation between empowerment and acceptance needs among both disadvantaged and advantaged groups and the resulting necessity to use residualized variables (in each case controlling for the other need) raise the question whether these two needs are indeed distinguishable and group-specific. However, we believe that the needs are distinguishable because the confirmatory factor analysis indicated that using a two-factor solution fitted the data better than using a single-factor solution. In addition, among disadvantaged groups, the residualized need satisfaction variables had opposite effects on support for social change (negative for acceptance, positive for empowerment). Thus, accepting contact might discourage members of disadvantaged groups to strive for social change, while empowering contact might encourage them to do so. The picture is less clear among members of advantaged groups where both (residualized) satisfaction of need for acceptance and need for empowerment were positively related to support for social change. Although we found that the two-factor solution fitted the data better, future research should find better ways to distinguish between need for empowerment and acceptance.

Heeding calls for a more rigorous integration of intergroup contact research and work on support for social change (Van Zomeren, 2019), it might be useful to also integrate other core predictors of support for social change – such as identification and anger – in the proposed model to better understand why accepting (compared to empowering) intergroup contact undermines support for social change among members of disadvantaged groups.

Accepting (compared to empowering) contact might reduce identification with other disadvantaged-group members, anger about group disparities, and the perceived illegitimacy.

Moreover, it would be interesting to systematically assess between-country differences and investigate how objective indices representing ethnic minority rights and legal situations of the LGBTIQ+ community can account for differences between countries.

Finally, future research should integrate other core predictors of support for social change and our conclusions should be systematically tested assessing between-country differences, using longitudinal, experimental data, and data from real-world interventions. Nonetheless, we were able to demonstrate the effect of different forms of intergroup contact and satisfaction of group-specific needs on support for social change in the largest and most heterogeneous dataset in the intergroup contact literature.

Conclusion

This research takes the debate whether creating social harmony via intergroup contact and support for social change are two incompatible goals a great step forward. It fosters our understanding of the circumstances under which intergroup contact helps to decrease existing structural inequalities through support for social change beyond group lines. The results of this comprehensive study suggest that both accepting and empowering intergroup contact have the potential to mobilize advantaged group members' support of social change toward greater equality. In contrast, only empowering contact has the potential to buffer against the otherwise emerging 'irony of harmony' effect among disadvantaged groups. Despite these buffering effects, empowering contact might not be sufficient to increase disadvantaged groups' willingness to raise awareness of social inequality among their peers and to promote participation in demonstrations and other high cost collective action. Raising ingroup-awareness, however, might be critical to increase perceived illegitimacy of group disparities and encourage sympathizers to act for social change. Further, high cost collective action

might sometimes be more efficient than low cost collective action in pushing for social change.

The results of this comprehensive study imply that reaching social harmony and social change do not need to be incompatible to the extent that disadvantaged groups are empowered during intergroup encounters. However, if the aim is to not only to encourage both groups to work in solidarity and to engage in low cost collective action, but to promote an even broader range of behavior related to support for social change, then group differences, power-relations, and inequalities might need to be explicitly made subject of the discussion. This implies that structured contact interventions that focus not only on fostering social cohesion, but also empower members of disadvantaged groups and raise awareness of existing inequalities can build bridges between social groups and help to promote greater social justice.

Chapter 6

General Discussion

‘Research that produces nothing but books will not suffice.’

—Kurt Lewin

Over twelve decades after New Zealand was the first country to allow women to vote, seven decades after the civil rights movement, and five decades after the Stonewall riots, inequalities based on gender, ethnicity, as well as sexual orientation and gender identity are still pervasive all over the world (ILGA & Mendos, 2019; United Nations Women, 2018, United Nations DESA, 2016). At the same time women's increasing participation in the working force and politics (Ortiz-Ospina & Tzvetkova, 2017), increasing immigration (United Nations DESA, 2017), and rising visibility of LGBTIQ+ individuals (Burgess, 2017) result in increased contact between diverse disadvantaged and advantaged groups, which has been assumed to help bridge social divides and foster social justice. Yet, while numerous studies have found that (positive) intergroup contact reduces prejudice (Pettigrew & Tropp, 2005), some scholars have argued that it might perpetuate rather than challenge structural inequalities by masking existing group disparities (Dixon et al., 2007; Saguy et al., 2009; Wright, 2001). Therefore, reaching social harmony and social justice might be two incompatible goals. Given the high practical relevance of this potential detrimental effect on social change, it is surprising that little research has investigated conditions under which both members of disadvantaged and advantaged groups cooperate to address persisting inequalities.

The present thesis makes a significant contribution to the literature in this regard. It (i) explores disadvantaged and advantaged groups' responses to inequalities, (ii) provides a large-scale test of the association between intergroup contact among disadvantaged and advantaged groups, and (iii) informs the debate on social harmony versus social justice by considering satisfaction of group-specific needs. Overall, the results indicate that in response to information about group-based disparities disadvantaged and advantaged groups experience divergent needs (i.e., empowerment for disadvantaged groups, acceptance for advantaged groups; Article 1). Satisfaction of these group-specific needs has the potential to

unite both groups in the struggle for social justice (Article 3) and buffer against the otherwise emerging detrimental effect of intergroup contact on disadvantaged groups' support for social change (Article 2).

Among disadvantaged-group members, the results of this thesis indicate that women and LGBTIQ+ individuals experience a heightened need for power in response to inequalities to the extent that they perceive group-disparities as unfair and illegitimate (Article 1). Moreover, the current thesis provides robust evidence that intergroup contact which satisfies these group-specific needs for empowerment predicts *more* support for social change toward greater equality among ethnic minorities and LGBTIQ+ individuals (Article 3). Indeed, only empowering contact had the potential to buffer against the otherwise emerging detrimental effect on disadvantaged groups' support for social change (Article 2). Thus, to foster support for social change among members of disadvantaged groups, it seems essential that intergroup contact satisfies their group-specific need, namely the need for empowerment.

Besides these general conclusions, application of specification curve analysis allowed us to investigate the intergroup contact-social change association in light of the many forms of intergroup contact and support for social change. First, not the quantity or frequency of intergroup contact, but rather more positive and intimate forms of intergroup contact seemed to dampen disadvantaged groups' support for social change. This is not surprising, given that intergroup contact which is experienced as positive and intimate is especially likely to discourage identification with the disadvantaged ingroup, decrease perceptions of illegitimacy and, in turn, anger about group disparities. Moreover, positive and intimate intergroup contact is also particularly likely to draw attention away from existing inequalities and increase (false) expectations of equal treatment. Hence, positive and intimate intergroup contact should suppress core facilitators of support for social change (see van Zomeren et al., 2008) among members of disadvantaged groups. However, positive intergroup contact

predicted increased willingness to work in solidarity with advantaged groups, which is consistent with the idea that positive and intimate intergroup contact increases trust (Hässler, González et al., 2019) and a shared sense of identity (Dovidio, Gaertner, & Kawakami, 2003). This is an important exception to the otherwise detrimental effect of intergroup contact on support for social change. Having often been overlooked by previous research (for exception see e.g., Droogendyk, Louis, & Wright, 2016; Reimer et al., 2017; Subašić et al., 2008), this exception offers a small ray of hope for how intergroup contact could promote social harmony and social change among disadvantaged groups.

For advantaged-group members, findings generally indicate that men and cis-heterosexual experience a heightened need for moral essence in response to inequalities, which was higher among low system justifiers (Article 1). In other words, those advantaged-groups members who perceive group-based disparities as illegitimate strive for moral acceptance by disadvantaged groups. The current thesis provides robust evidence that intergroup contact was in general associated with *more* support for social change among ethnic majorities and cis-heterosexuals (see Articles 2-3). Moreover, intergroup contact which satisfies the group-specific need for (moral) acceptance predicts *more* support for social change toward greater equality over and above the effect of intergroup contact (Article 3). Interestingly, additional analysis suggests that also empowering intergroup contact has the potential to mobilize advantaged-groups members' support for social change. Consequently, the results of this comprehensive study suggest that group-specific need satisfaction might be less essential in motivating advantaged groups' (compared to disadvantaged groups') support for social change.

Besides these general conclusions, application of specification curve analysis revealed the distinctive role of raising ingroup-awareness among advantaged groups. Accepting intergroup encounters positively predicted intentions for (low and high cost) collective

action, support for empowering policies, and willingness to work in solidarity among members of advantaged groups. In contrast, accepting intergroup encounters negatively predicted willingness to raise ingroup-awareness about existing group disparities. Moreover, advantaged-group members were on average rather unwilling to talk about inequalities with their privileged ingroup peers (see supplementary materials of Article 3). Considering the distinctive role of raising ingroup awareness, what makes this behavior special?

Out of all measures of support for social change that we considered, only raising ingroup awareness involves a confrontation of ingroup members. Unlike members of disadvantaged groups, members of advantaged groups are in the comfortable position to choose when they want to deal with social inequalities and when not. The socially costly behavior of raising ingroup awareness may 'alienate [activists] from friends and family who support 'mainstream' society' (Jost, Becker, Osborne, & Badaan, 2017, p. 101). Thus, the desire to avoid negative personal outcomes (Good, Moss-Racusin, & Sanchez, 2012) and to maintain a seemingly shared reality with one's ingroup peers may lead individuals to profess one's support for the status quo and to refrain from 'upsetting the apple-cart' (Jost, Ledgerwood, & Hardin, 2008, p. 174).

In sum, these results underline the importance of considering the type and content of contact for understanding how intergroup contact affects different behaviors related to support for social change. While intergroup contact had in general a positive effect on advantaged groups' support for social change, empowering intergroup contact seems essential to motivate disadvantaged groups' support for social change.

Implications of the Debate Whether Reaching Social Harmony and Social Change are Incompatible Goals

All in all, the present thesis provides strong evidence that members of disadvantaged and advantaged groups experience inequalities in a different manner, yet how could we

address these differences to reach social equality? Reaching social harmony and social justice might not be two incompatible goals to the extent that intergroup encounters satisfy disadvantaged groups' specific need for empowerment. Thus, the findings presented above indicate two main routes of social change. On one hand, intergroup contact has the capability to promote support for social justice among advantaged-group members. On the other hand, empowering intergroup contact seems to buffer against detrimental effects of intergroup contact on disadvantaged groups' support for social change.

Among advantaged-group members, intergroup contact was associated with increased support for social change. Yet, it did not (or in the case of accepting contact even negatively) affect the willingness to raise ingroup-awareness about inequalities. Moreover, advantaged groups were in general rather reluctant to talk about inequalities with their ingroup peers. This is especially problematic considering that the literature on confrontation behaviors suggests that confrontation by those who are not directly negatively affected by existing inequalities are perceived as more credible than confrontation by those who are directly affected by existing inequalities (Czopp & Monteith, 2003). Therefore, advantaged groups can play an elementary role in changing in battling existing inequalities. Consequently, advantaged groups' unwillingness to confront inequalities might contribute to the advantaged-groups' failure to recognize own privileges, mask existing privileges among advantaged-group members, and undermine a powerful way to change the hearts and minds of those advantaged groups who perceive group-based disparities as legitimate (see also Droogendyk, Louis et al., 2016).

Among disadvantaged-group members, intergroup contact was associated with decreased support for social change. Empowering contact, however, could buffer against the otherwise emerging detrimental intergroup contact effect. This suggests that only to the extent that intergroup contact satisfies disadvantaged-group members' need for power, the

present research lends support to the contention that '*…[intergroup] contact can bridge social divides and unite people in the struggle for social justice'* (Reimer et al., 2017, p.133). However, a practical problem is that advantaged groups may not spontaneously provide the kind of empowering contact that benefits support for social change. Members of advantaged groups generally avoid discussions about group differences in power and prefer to talk about commonalities instead (Aydin, Ullrich, Siem, Locke, & Shnabel, 2019; Bergsieker et al., 2010; Saguy & Kteily, 2014). Focusing on commonalities between groups, in turn, is one way in which advantaged groups can protect their moral image (Knowles et al., 2014). Yet, intergroup contact that neglects the need for acceptance among advantaged-group members and exclusively focuses on the empowerment of the disadvantaged-group members instead might represent a potential threat to advantaged groups' moral image (see also MacInnis & Hodson, 2019). Hence, intergroup contact situations that do not address need for acceptance among members of advantaged groups might in the long run discourage advantage groups' support social change (Shnabel & Ullrich, 2013) and even lead to disruptive behavior (Maoz, 2011), particularly among those that perceive the group-disparities as legitimate and fair.

A gradual shift from a focus on communality to a focus on difference might have the capacity to build trust and raise awareness about group disparities and, therefore, foster sustained support among members of disadvantaged and advantaged groups. This is in line with empirical findings which show that only advantaged-group members who have little outgroup contact express less support for social change when the content of the intergroup contact focuses on differences versus commonalities, while the focus of contact mattered less among advantaged-group members with more outgroup contact (Vezzali, Andrighetto, Capozza, Di Bernardo, & Saguy, 2017). Consequently, a certain level of positive contact might be needed before intergroup contact can address power relations and inequalities (MacInnis & Page-Gould, 2015; MacInnis & Hodson, 2019).

Finally, while empowering contact seems essential to buffer against otherwise emerging detrimental effects of intergroup contact among disadvantaged group members, it might not be sufficient to promote more costly forms of collective action. Yet, these actions might be particularly efficient in achieving fundamental social change. This suggest that intergroup contact might need a more explicit focus on inequalities and power relations to promote sensitivity to inequalities and support for social justice among both groups (Saguy, Shchori-Eyal, Hasan-Aslih, Sobol, & Dovidio, 2016).

A strategy to not only build trust but to also discuss existing inequalities and power differences are mixed-model encounters (Abu-Nimer & Lazrus, 2007; Moaz, 2007, Zúñiga, Nagda & Sevig, 2002). These structured contact interventions first emphasize commonalities and then switch the focus gradually to differences, power-relations, and inequalities. Thus, mixed-model encounters may allow to promote support for social change among disadvantaged and advantaged groups by addressing group-specific needs among both groups and making existing inequalities and power asymmetries more visible.

Potential Objections and Future Directions

The present thesis makes important contributions to the literatures on intergroup contact and support for social change, highlights the value of a multi-lab approach, and the application of specification curve analysis in a large and heterogenous sample including both the ethnic and the LGBTIQ+ context. However, some limitations need to be acknowledged that point to new directions for future research.

First, several variables of interest (e.g., identification and perceived efficacy) were measured that call for theoretical integration with the social identity model of collective action (van Zomeren et al., 2008). The social identity model of collective action postulates that identification, perceived illegitimacy of group disparities, and perceived efficacy play critical roles in motivating people to engage in support for social change. Among

disadvantaged-group members accepting (compared to empowering) intergroup contact might decrease identification with the ingroup, perceptions of illegitimacy, and group efficacy. In contrast, among advantaged-group members it might increase a shared sense of identification with members of disadvantaged groups, perceptions of illegitimacy, and group efficacy. Notably, the social identity model of collective action considers perceived illegitimacy as a predictor of support for social change, while the current thesis considers perceived illegitimacy as moderator of the effect of need satisfaction on support for social change link. The decision to consider perceived illegitimacy as a moderator was based on findings that the emergence of group-specific needs is particularly pronounced when both groups perceive the status inequality as illegitimate (Siem, von Oettingen, Mummendey, & Nadler, 2013; see also Article 1). This inconsistency should be addressed using longitudinal or experimental data.

In addition, the current thesis provides a high-level summary of a subset of variables serving as facilitators of social change. Although we controlled for between-countries differences by using residualized items (i.e., regressing the original items on the subsample identifier variable to obtain residualized item scores) there are important cross-cultural differences between the samples from different countries and continents that need to be considered in a comparative perspective. To illustrate, our participants came from countries varying substantially in the level of legal inclusion of LGBTIQ+ individuals. In some of the included countries, LGBTIQ+ individuals are able to marry and enjoy far-reaching legal protections (e.g., Netherlands, Spain), in others they still face serious discrimination and hate crimes (e.g., Kosovo, Poland), and Russia's anti-homosexual propaganda law even criminalizes LGBTIQ+ events held in public spaces (ILGA & Mendos, 2019).

Given the cross-cultural variability of institutionalized stigma in our sample, it seems desirable to complement our survey data with country-level indicators of inequality, discrimination, and the legal situation with regard to disadvantaged groups' rights. Migrant integration policies or institutionalized stigmatization of LGBTIQ+ individuals are likely to convey social norms about where disadvantaged groups stand in the respective society and have been shown to affect attitudes and experiences of both members of disadvantaged (e.g. Ariely, 2012; Hatzenbuehler & McLaughlin, 2014; Górska, Bilewicz, & Winiewski, 2017) and advantaged groups (e.g. Kuntz, Davidov, Schwartz, & Schmidt, 2015; Visintin, Green, & Sarrasin, 2018). To illustrate, institutional stigma has been found to undermine the effects of intergroup contact on lower symbolic threat (Green, Visintin, Sarrasin, & Hewstone, 2019). In other words, intergroup contact was less effective in reducing symbolic threat in more stigmatizing rather than less stigmatizing countries. Given that institutional policies present a strong signal of the direction in which the society is heading (Tankard & Paluck, 2016), they should also directly impact on citizen's support for social change. In line with this reasoning, institutionalized stigma has been shown to discourage support for social change by LGBTIQ+ individuals by increasing internalized stigmatization and undermining ingroup identification (Górska, Bilewicz, & Winiewski, 2017).

Consequently, in countries with high institutionalized stigma individuals might perceive group-based disparities as more legitimate, resulting in decreased support for social change toward greater equality among both disadvantaged and advantaged groups. However, the impact of group-specific need satisfaction on support for social change are less clear. On one hand, high institutionalized stigma might decrease perceptions that a social movement is effective in achieving the desired social change. This decrease in group efficacy, in turn, should undermine the positive effect of group-specific need satisfaction on support for social change. On the other hand, group-specific need satisfaction could promote anger about

existing disparities in countries with high institutionalized stigma. Anger about existing disparities should particularly emerge among those individuals who perceive existing group disparities as highly illegitimate (see also Eisner, Hässler, Turner-Zwinkels, & Settersten, 2019).

Further, all samples are convenience samples (Articles 1-3). Yet, due to the size and the heterogeneity of the collected multinational sample there is no reason to expect that processes would be any different. In addition, all data rely on self-reports and four out of five measures of support for social change assessed intentions rather than actual behavior. While intentions are reliable predictors of actual support for social change (Tausch et al., 2011), actual support might be lower (see also intention-implementation-gap; Dixon et al., 2007). Moreover, due to the correlational nature of the data causal inferences cannot be drawn. As discussed above, it is plausible that perceived illegitimacy mediates rather than moderates the effect of intergroup contact on support for social change. It is further plausible to assume that the effect of intergroup contact on, in particular, advantaged groups' support for social change is of bidirectional nature. Therefore, conclusions of this thesis should be systematically tested using longitudinal or experimental data and should be applied in real-world interventions involving actual behaviors (see Shani & Boehnke, 2017 for an intervention that focused on both commonalities and group-disparities).

In regard to the boundary conditions of group-specific needs, we found that both members of disadvantaged and advantaged groups experienced the respective group-specific needs more strongly when they perceive the group disparity to be illegitimate (Article 1). Therefore, it seems plausible that the positive effects of group-specific needs satisfaction on support for social change should be more pronounced if individuals perceive existing group disparities as illegitimate. Yet, our findings on the two-way interaction between need satisfaction and perceived illegitimacy (Article 3) do not strongly support this assumption.

One reason for this unexpected finding could be that all groups perceived the group-based disparities as highly illegitimate (see Article 3, Table S24 for disadvantaged groups and Table S25 for advantaged groups). Thus, the interaction might add little to the main effect (see also McClelland & Judd, 1993 for the difficulties in detecting interaction effects in non-experimental studies). Despite this unexpected finding, perceived illegitimacy should not easily be dismissed as the emergence of divergent needs seem to be contingent on it (Article 1; Siem, von Oettingen, Mummendey, & Nadler, 2013; but see Aydin et al., 2019).

Moreover, the results of Article 1 suggest that members of both groups who legitimize group-based disparities might defend rather than challenge the status quo. This suggests that disadvantaged-group members might internalize stigma and defend their inferior status, while advantaged-group members might react in a defensive manner to protect their ingroup image and their privileges. Furthermore, among advantaged-groups members who legitimize group-based disparities, empowering contact could serve as a justification of existing power differences. Indeed, literature on the compensation effect between warmth and competence suggests that perception of one's ingroups as powerful might impact perception of one's outgroup in a compensatory direction. Thus, empowering contact might decrease perceptions of the disadvantaged group as powerful by increasing advantaged group's perception of their own ingroup as powerful (Kervyn, Yzerbyt, Demoulin, & Judd, 2008).

Finally, in line with assumptions of the needs-based model, the satisfaction of group-specific needs should promote support for social change amongst both groups. Yet, the high correlation between acceptance and empowerment needs suggest that the need for power and the need for acceptance are not easy to disentangle. Given that intergroup contact might need to reach a certain threshold of trust before more power-oriented topics can be addressed (MacInnis & Page-Gould, 2015), the correlation between satisfaction of both needs seems not surprising. However, the results of the confirmatory factor solution and the findings that only

empowering contact promotes support for social change among disadvantaged groups' (while accepting contact discourages it) suggest that it is still relevant to distinguish between both needs.

Despite the limitation mentioned above, this thesis gives a nuanced answer to the question when disadvantaged and advantaged groups in the contexts of gender, ethnicity, and sexual orientation/gender identity cooperate to achieve social justice.

Conclusion

We live in a world in which some people still enjoy unearned privileges due to their gender, their origin, and their sexual orientation or gender identity. Yet, inequalities faced by disadvantaged groups are not only an issue of the disadvantaged but an issue of fairness for all. The present thesis fosters our understanding of the circumstances under which intergroup collaboration in service of greater social equality occur. While intergroup contact seems to be an important motivator for advantaged groups' support for social change, it undermines disadvantaged groups' struggle for greater equality. It is important to consider this so-called 'irony of harmony' effect since intergroup contact-based interventions might otherwise unintentionally reinforce rather than challenge structural inequalities. The findings of the present thesis, however, provide a solution to this dilemma: Empowering contact can buffer against the detrimental effect of intergroup contact. This discovery can offer a clearer route for policy strategists and practitioners who seek both to enhance social cohesion and build support for positive social change. Interventions aiming to foster social justice should apply a mixed-model approach which aims to build a climate of trust first, followed by an open discussion of privileges enjoyed by some and deprivations faced by others. Therefore, the findings of the present thesis can provide a new route in which intergroup contact can foster support for social change beyond group lines.

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Appendix

This appendix contains the supplementary materials for Article 2 and Article 3.

Supplementary Materials for

A large-scale test of the link between intergroup contact and support for social change.

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Data and materials have been deposited on the Open Science Framework under the following link https://osf.io/m5pb6/?view_only=fd97cc15ba5f4874ad024680ca720bad. Since our participants only consented to having their data published in aggregated form and publishing the raw data may pose a threat to the confidentiality and safety of the participants, we published the residualized data only. That is, each variable containing participants' responses was subjected to a one-way ANOVA using the subsample identifier variable as factor. The residuals of this ANOVA were used for all analyses reported in the paper.

Summary of Deviations from the Preregistration

The main difference between the plan as filed (see https://osf.io/6hfcu/) and the publication is that in the interest of more efficient communication of results we report only the relation between intergroup contact and support for social change. Leaving out measures of need satisfaction during contact allowed us to also include participants who reported having no contact with the respective outgroup. Moreover, we also included items assessing indirect contact (i.e., the knowledge or observation that one or more ingroup member have contact with one or more outgroup members) – originally, we planned to include only measures of direct contact. Further, based on theoretical considerations, we deviated from the proposed starting point in the construction of the intergroup contact scales and excluded two items among LGBTIQ+ individuals (see below). For a detailed overview see Table S10. The main conclusions remain unaltered by the changes to the inclusion and construction of scales.

Sample

Our sample includes 12,997 participants from 69 countries. The sample is made up of 3,216 ethnic majority group members, 4,898 cis-heterosexuals, 1,000 ethnic minority group members, and 3,883 LGBTIQ+[25] individuals. Informed consent from all included participants

[25] The term LGBTIQ+ denotes individuals identifying as lesbian, gay, bisexual, transgender, intersexual, queer, or other sexual and gender minorities.

was obtained. For more detailed information on the composition of our sample and each of the four populations (i.e., ethnic majorities, cis-heterosexuals, ethnic minorities, and LGBTIQ+ individuals) refer to Table S1 for the ethnic context and Table S2 for the LGBTIQ+ context. The LGBTIQ+ population is further specified in Table S3, which contains the frequencies of LGBTIQ+ subgroups based on sexual orientation and gender identity.

Table S10
Overview of Included Participants – Ethnic Context

		Ethnic Majorities			Ethnic Minorities		
Intergroup Context	**Country**	***N***	**Mean Age (*SD*)**	**Gender**	***N***	**Mean Age (*SD*)**	**Gender**
Belgians / Moroccans	Belgium	122	18.61 (1.99)	male = 0 female = 122 other = 0	–	–	–
Belgians / Turks	Belgium	40	18.48 (0.78)	male = 0 female = 40 other = 0	–	–	–
Whites / Blacks	Brazil	167	32.31 (12.11)	male = 37 female = 129 other = 1	–	–	–
Non-Indigenous / Mapuche	Chile	170	28.23 (9.54)	male = 60 female = 110 other = 0	118	29.92 (10.14)	male =56 female = 61 other = 0 NA = 1
Chileans / Peruvians	Chile	133	30.61 (14.06)	male = 58 female = 74 other = 1	127	33.10 (12.02)	male = 59 female = 67 other =0 NA = 1
Non-Muslims / Muslims	Germany	198	32.25 (12.30)	male = 71 female = 124 other = 3	110	31.94 (11.35)	male = 70 female = 39 other = 1
Germans / Refugees	Germany	181	30.44 (14.06)	male = 48 female = 130 other = 3	–	–	–
Germans / Refugees	Germany	175	35.50 (12.17)	male = 95 female = 80 other = 0	–	–	–
Germans / Turks	Germany	205	34.71 (12.03)	male = 120 female = 85 other = 0	–	–	–
Jews / Arabs	Israel	120	24.53 (2.36)	male = 34 female = 86 other = 0	–	–	–
Jews / Ethiopians	Israel	101	25.84 (4.72)	male = 39 female = 62 other = 0	–	–	–

Albanians / Serbs	Kosovo	146	20.45 (1.60)	male = 15 female = 131 other = 0	112	24.70 (4.80)	male = 44 female = 68 other = 0
Polish / Ukrainians	Poland	155	36.29 (12.60)	male = 73 female = 82 other = 0	89	22.66 (4.83)	male = 29 female = 60 other = 0
Serbs / Bosniaks	Serbia	122	21.33 (2.05)	male = 23 female = 99 other = 0	95	31.62 (11.65)	male = 40 female = 55 other = 0
Non-Roma/ Roma	Spain	536	24.44 (7.62)	male = 172 female = 360 other = 4	27	33.04 (12.23)	male = 14 female = 13 other = 0
Non-Muslims / Muslims	Switzerland	121	28.41 (11.96)	male = 37 female = 83 other = 1	89	32.26 (12.81)	male = 40 female = 49 other = 0
Swiss / Portuguese immigrants	Switzerland	129	29.24 (10.88)	male = 32 female = 97 other = 0	–	–	–
British / Asians	United Kingdom	101	21.20 (7.25)	male = 23 female = 78 other = 0	127	21.50 (5.77)	male = 21 female = 106 other = 0
Non-Muslims / Muslims	United Kingdom	157	36.75 (12.39)	male = 76 female = 80 other = 1	–	–	
Whites / Blacks	United States	133	20.08 (1.29)	male = 23 female = 110 other = 0	–	–	
Non-Muslims / Muslims	United States	4	36.75 (8.46)	male = 4 female = 0 other = 0	106	34.15 (13.41)	male = 39 female = 67 other = 0
	Total	***3,216***	28.08 (11.28)	male = 1040 female = 2162 other = 14	***1,000***	29.15 (11.13)	male = 412 female = 585 other = 1 NA = 2

Note. In the first column, the social category before the slash (/) refers to the ethnic majority and the social category after the slash refers to the ethnic minority targeted in the measures for this country. Note that for simplicity, we use the term “ethnic” to also refer to social categories differing by their racial, national, tribal, religious, or cultural origin or background.

Table S11
Overview of Included Participants – Sexual and Gender Identity Context

	Cis-Heterosexuals			Sexual and Gender Minorities		
Country	***N***	***Age (SD)***	***Gender***	***N***	***Age (SD)***	***Gender***
Argentina	1	22.00 (NA)	male = 0 female = 1	6	32.00 (22.09)	male = 1 female = 4 other = 1
Australia	19	36.42 (12.93)	male = 4 female = 15	73	38.93 (14.21)	male = 23 female = 31 other = 19
Austria	74	43.14 (16.48)	male = 42 female = 32	110	35.38 (11.66)	male = 36 female = 65 other = 9
Azerbaijan	1	22.00 (NA)	male = 0 female = 1	–	–	–
Belarus	1	30.00 (NA)	male = 1 female = 0	1	21.00 (NA)	male = 1 female = 0 other = 0
Belgium	190	19.80 (7.00)	male = 4 female = 186	158	38.94 (17.51)	male = 88 female = 60 other = 10
Bolivia	–	–	–	1	35.00 (NA)	male = 1 female = 0 other = 0
Bosnia and Hercegovina	1	24.00 (NA)	male = 0 female = 1	4	26.75 (8.06)	male = 0 female = 4 other = 0
Botswana	–	–	–	1	26.00 (NA)	male = 0 female = 0 other = 1
Brazil	123	35.77 (12.15)	male = 49 female = 74	103	30.14 (9.38)	male = 45 female = 56 other = 2
Canada	402	22.23 (5.92)	male = 93 female = 309	228	26.40 (10.19)	male = 57 female = 127 other = 44
Chile	316	25.99 (11.18)	male = 102 female = 214	236	23.66 (7.33)	male = 107 female = 121 other = 8
China	26	22.27 (2.81)	male = 14 female = 12	19	24.84 (6.37)	male = 6 female = 8 other = 5
Columbia	1	40 (NA)	male = 0 female = 1	2	32.50 (4.95)	male = 1 female = 1 other = 0
Croatia	186	27.25 (8.73)	male = 32 female = 154	107	26.83 (8.61)	male = 47 female = 56 other = 4
Czech Republic	116	28.53 (12.33)	male = 48 female = 68	125	23.12 (6.40)	male = 28 female = 96 other = 1
Denmark	3	31.67 (14.19)	male = 1 female = 2	4	33.50 (12.29)	male = 2 female = 2 other = 0

El Salvador	–	–	–	1	19.00 (NA)	male = 0 female = 1 other = 0
Estonia	1	25 (NA)	male = 1 female = 0	2	32.00 (14.14)	male = 2 female = 0 other = 0
Ethiopia	–	–	–	1	31.00 (NA)	male = 1 female = 0 other = 0
France	14	26.64 (9.37)	male = 5 female = 9	122	34.00 (15.80)	male = 59 female = 29 other = 34
Germany	678	40.81 (15.55)	male = 442 female = 236	445	34.80 (13.15)	male = 141 female = 239 other = 65
Greece	1	18 (NA)	male = 0 female = 1	1	32.00 (NA)	male = 1 female = 0 other = 0
Hungary	259	22.47 (5.37)	male = 55 female = 204	177	30.44 (12.10)	male = 78 female = 86 other = 13
Iceland	–	–	–	9	28.11 (10.46)	male = 4 female = 4 other = 1
India	1	27 (NA)	male = 0 female = 1	3	48.00 (12.12)	male = 2 female = 0 other = 1
Iran	–	–	–	1	27.00 (NA)	male = 1 female = 0 other = 0
Isle of Man	1	19 (NA)	male = 0 female = 1	–	–	–
Israel	1	29 (NA)	male = 0 female = 1	2	25.50 (6.36)	male = 0 female = 2 other = 0
Italy	177	29.51 (10.25)	male = 38 female = 139	200	28.98 (10.49)	male = 58 female = 122 other = 20
Japan	1	26 (NA)	male = 0 female = 1	2	27.50 (2.12)	male = 1 female = 0 other = 1
Kazakhstan	2	40 (7.07)	male = 2 female = 0	–	–	–
Kosovo	144	21.88 (3.83)	male = 9 female = 135	39	23.64 (5.05)	male = 19 female = 20 other = 0
Kyrgyzstan	–	–	–	1	22.00 (NA)	male = 1 female = 0 other = 0
Latvia	1	35 (NA)	male = 1 female = 0	–	–	–
Liechtenstein	–	–	–	2	28.50 (6.36)	male = 1 female = 1 other = 0
Lithuania	2	33.00	male = 1	–	–	–

		(16.97)	female = 1			
Luxembourg	1	30 (NA)	male = 0 female = 1	–	–	–
Macedonia	1	22 (NA)	male = 0 female = 1	–	–	–
Malaysia	1	37 (NA)	male = 0 female = 1	–	–	–
Mexico	106	24.72 (9.32)	male = 19 female = 87	59	27.75 (9.90)	male = 25 female = 31 other = 3
Moldova	–	–	–	2	34.50 (7.78)	male = 0 female = 1 other = 1
Monaco	–	–	–	1	34.00 (NA)	male = 1 female = 0 other = 0
Montenegro	–	–	–	2	20.00 (1.41)	male = 0 female = 1 other = 1
Netherlands	286	20.77 (5.61)	male = 51 female = 235	162	38.93 (19.01)	male = 71 female = 81 other = 10
New Zealand	–	–	–	9	28.33 (8.86)	male = 3 female = 3 other = 3
Nicaragua	–	–	–	1	33.00 (NA)	male = 0 female = 1 other = 0
Norway	1	28 (NA)	male = 0 female = 1	3	40.67 (21.22)	male = 1 female = 2 other = 0
Peru	1	18 (NA)	male = 0 female = 1	3	19.00 (0.00)	male = 0 female = 3 other = 0
Poland	293	40.79 (11.58)	male = 126 female = 167	178	27.83 (7.73)	male = 54 female = 110 other = 14
Portugal	–	–	–	1	28.00 (NA)	male = 1 female = 0 other = 0
Russia	190	30.97 (12.07)	male = 35 female = 155	123	28.00 (8.57)	male = 50 female = 65 other = 8
Rwanda	–	–	–	1	24.00 (NA)	male = 1 female = 0 other = 0
Serbia	58	31.57 (9.54)	male = 13 female = 45	80	29.31 (8.29)	male = 47 female = 29 other = 4
Singapore	2	45.50 (16.26)	male = 2 female = 0	–	–	–
Slovakia	6	26.17 (8.86)	male = 3 female = 3	6	25.50 (7.50)	male = 3 female = 3 other = 0

South Africa	1	25 (NA)	male = 0 female = 1	1	51.00 (NA)	male = 0 female = 1 other = 0
Spain	419	23.54 (5.69)	male = 110 female = 309	319	24.70 (7.73)	male = 121 female = 188 other = 10
Suriname	–	–	–	1	66.00 (NA)	male = 0 female = 0 other = 1
Sweden	3	29.33 (0.58)	male = 0 female = 3	4	33.50 (9.11)	male = 2 female = 0 other = 2
Switzerland	338	30.71 (12.95)	male = 95 female = 243	324	33.17 (12.74)	male = 88 female = 195 other = 41
Taiwan	–	–	–	1	17.00 (NA)	male = 0 female = 1 other = 0
Thailand	–	–	–	3	46.00 (26.63)	male = 1 female = 2 other = 0
The Bahamas	–	–	–	1	23.00 (NA)	male = 0 female = 0 other = 1
Turkey	111	28.95 (7. 93)	male = 39 female = 72	56	28.07 (7.85)	male = 29 female = 21 other = 6
Ukraine	19	33.42 (8.17)	male = 4 female = 15	68	32.31 (11.25)	male = 25 female = 41 other = 2
United Arabic Emirates	–	–	–	1	34.00 (NA)	male = 1 female = 0 other = 0
United Kingdom	119	29.39 (12.38)	male = 33 female = 86	127	34.35 (14.25)	male = 47 female = 68 other = 12
United States	199	35.64 (12.54)	male = 101 female = 98	160	28.08 (11.59)	male = 62 female = 79 other = 19
Total	***4,898***	29.47 (12.84)	male = 1,575 female = 3,323	***3,883***	30.42 (12.53)	male = 1,445 female = 2,061 other = 377

Table S12
Sample Composition (LGBTIQ+ Individuals)

Sexual Orientation/ Gender	Male	Female	Intersex	Other	*Total N*
Heterosexual	31 (31)	19 (19)	3 (1)	26 (16)	79 (67)
Bisexual	227 (32)	854 (30)	11 (4)	83 (69)	1175 (135)
Homosexual	1109 (28)	900 (34)	10 (4)	63 (48)	2082 (114)
Asexual	28 (8)	105 (6)	4 (2)	45 (39)	182 (55)
Other	50 (23)	183 (23)	2 (0)	130 (117)	365 (163)
Total N	1445 (122)	2061 (112)	30(11)	347 (289)	3883 (534)

Note: In parentheses: Individuals identifying as transgender.

Recruitment and Exclusion of Participants

We collected the data between June 2016 and June 2017. We recruited participants through online platforms (e.g., social networking sites, snowball sampling, and contacting relevant organizations) to voluntarily complete our survey online, and on university campuses or on the street to voluntarily complete paper/pencil surveys. Participants were told that they would complete a study about relations between different groups in society. They completed the survey either for (a) course credits or (b) a chance to win one of two vouchers worth 250 Euros or one of twenty vouchers worth 50 Euros. Upon completion, participants were thanked and debriefed. All participants consented to their data being used for research purposes as well as being published in anonymized and aggregated form.

Figure S1 depicts the exclusion process.[26] The first filter excluded participants who had missing values on the attention check items and, therefore, did not complete all measures of interest. The second filter excluded all participants with missing values on the first *quantity of contact* item (How often do you interact with [participants' outgroup]?), and all participants who reported having outgroup contact but had missing values on the *number of outgroup friends* item (How many of your friends are [participants' outgroup]?). Hence, we included only participants who either had (a) outgroup contact and no missing values on the *number of outgroup friends* item, or (b) no outgroup contact (see Table S4 for measures and items). The third filter excluded all participants who had not answered 20% (or more) of the items used in the analyses, i.e., all *support for social change* items and all *intergroup contact* items which were not skipped due to specific filters (see Table S4 for relevant items). All *support for social change* items were treated as relevant to all participants.

[26] During the data preparation we excluded a few cases: test persons, participants indicating being younger than 16, participants who entered impossible values for age and/or country. Since the legal rights of LGBTIQ+ people vary between countries, we also excluded participants indicating a dual group membership (e.g., residency in two countries).

Regarding intergroup contact, for participants who had indicated never interacting with the outgroup, only the first *quantity of contact* item ('How often do you interact with [outgroup members]?') and the three *indirect contact* items (quantity of indirect outgroup friends, positive indirect contact, absence of negative indirect contact) were classified as relevant items. For participants with outgroup contact but without outgroup friends, both *quantity of contact* items, the three *indirect contact* items, as well as the *positive contact*, *absence of negative contact*, and *number of outgroup friends* items were classified as relevant items. For participants with both outgroup contact and outgroup friends, all intergroup contact items were classified as relevant items.

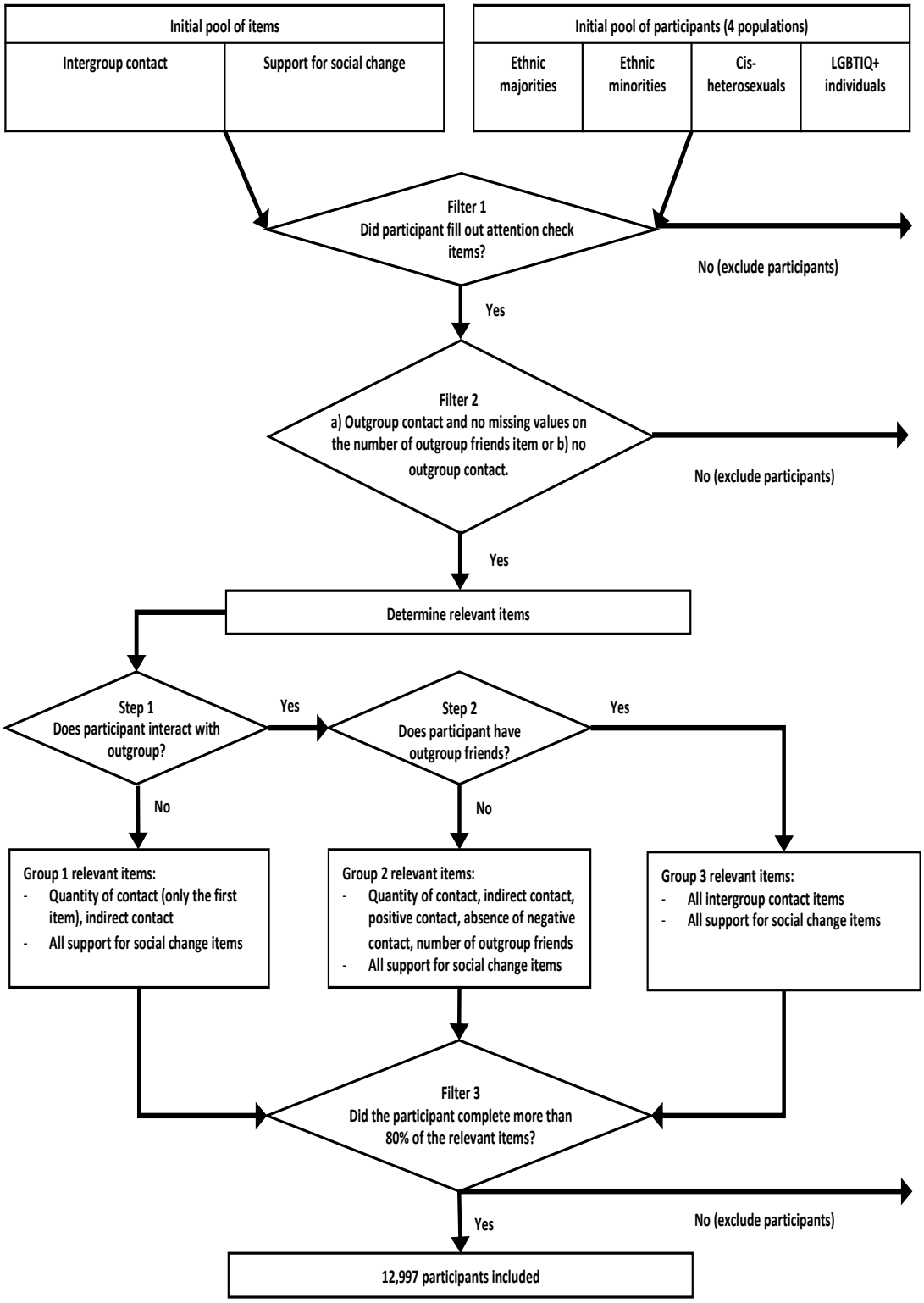


Figure S19. Exclusion of participants.

Measures

We used parallel survey items for each of the four populations. All questionnaires contained additional measures not reported in the main article and this supplementary material (the full questionnaires can be found here: https://osf.io/uv7aq/). The constructs of interest were intergroup contact and support for social change. To assess the influence of operationalization on the results using specification curve analysis, we included an array of commonly used measures of both constructs. We additionally included two new measures of *support for social change* focusing on the willingness to (1) work in solidarity with the outgroup to promote social equality and to (2) raise awareness of social inequality among ingroup members. We also included two attention check items. Participants who selected a wrong answer at least once were classified as having failed the attention check. 12.6% of the participants failed the attention check. Please refer to Table S4 for a detailed overview of the final set of measures, to Table S5 for descriptive statistics among advantaged groups, and to Table S6 for descriptive statistics among disadvantaged groups.

The top half of Figure S2 depicts the data preparation process, which includes the construction of the final scales. Consistent with the preregistration, the final number of items and measures per construct was determined by the results of the CFA. Controlling for the mean differences between specific subsamples, we ran CFAs, separately by the four populations, on all items used to measure intergroup contact and support for social change. More detailed information on the CFA and the construction of the final scales can be found below (see section *Confirmatory Factor Analysis and Final Scale Construction)*. The final set of measures includes the same five *support for social change* scales for all four populations. The number of *intergroup contact* scales for LGBTIQ+ individuals (6) differs from those of the other groups (8) because we did not include *quantity of contact* and *quantity of indirect*

outgroup friends for LGBTIQ+ individuals (unlike members from different ethnic groups LGBTIQ+ individuals and cis-heterosexuals are in constant contact).

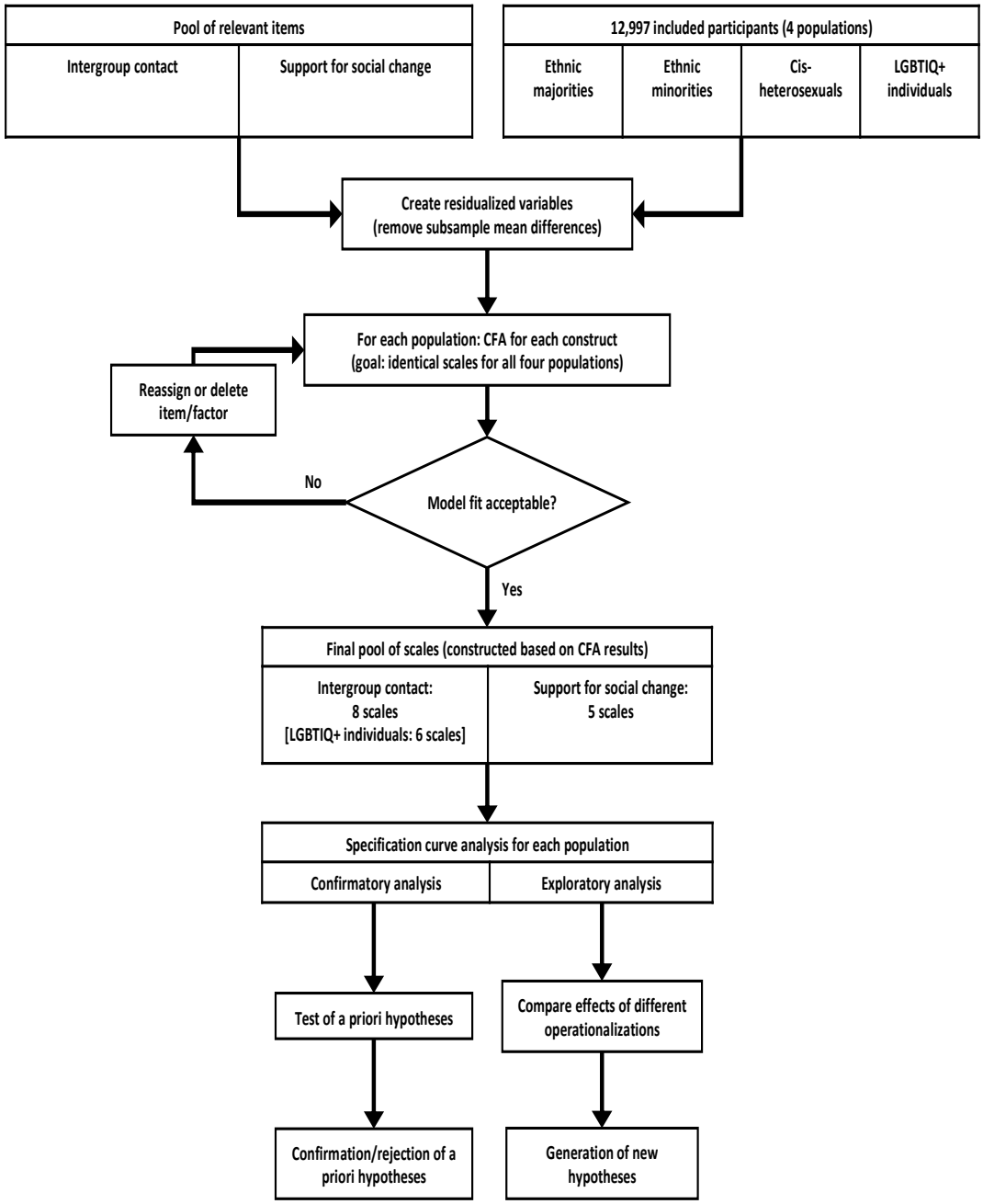


Figure S20. Data preparation and analytic procedure.

Table S13
Overview of Constructs, Measures, and Items

Constructs & Measures	Items	Source/Comment
Intergroup Contact		
1) Quantity of contact†	1†) How often do you interact with [participants' outgroup]? (1 = *Never,* 2 = *Less than once a year*, 3 = *Yearly*, 4 = *A few times a year*, 5 = *Monthly*, 6 = *Weekly*, 7 = *Daily*) 2†) How many [participants' outgroup] people do you know, at least as acquaintances? (0 = *None*, 10 = *10 or more*)	Adapted from Voci & Hewstone (2003)
2) Positive contact	When you interact with [participants' outgroup], to what extent do you experience the following: 1) The contact is friendly? 2) You cooperate well with each other? 3) You interact as equals? (1 = *Strongly disagree* to 7 = *Strongly agree*)	Adapted from Kelly & Breinlinger (1995) Tropp & Brown (2004)
3) Absence of negative contact (negative contact, recoded)	When you interact with [participants' outgroup], to what extent do you experience the following: 1) The contact was unpleasant? 2) The contact is negative? (1 = *Strongly disagree* to 7 = *Strongly agree*)	Adapted from Barlow et al. (2012)
4) Number of outgroup friends	1) How many of your friends are [participants' outgroup]? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Tropp & Pettigrew (2005)
5) Frequency of meeting outgroup friends	1) How often do you meet your [participants' outgroup] friends? (1 = *Never* to 7 = *Daily*)	Adapted from Tropp & Pettigrew (2005)
6) Quantity of indirect outgroup friends†	1†) As far as you are aware, how many of your [participants'-ingroup] friends or close relatives have [participants' outgroup] friends? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Turner, Hewstone, and Voci (2007)
7) Positive indirect contact	1) As far as you are aware, how many of your [participants' ingroup] friends or close relatives have had good experiences with [participants' outgroup] members? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Mazziotta et al. (2015)
8) Absence of negative indirect contact (negative indirect contact, recoded)	1) As far as you are aware, how many of your [participants' ingroup] friends or close relatives have had bad experiences with [participants' outgroup] members, like tensions or conflict? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Mazziotta et al. (2015)

Support for Social Change		
1) Low cost collective action	Would you like to engage in the following activities in the future? 1) Voting for political candidates who support the equal treatment of [disadvantaged group]. 2) Signing an online/regular petition to support action against the unequal treatment of [disadvantaged group]. 3) Sharing posts on Facebook to support [disadvantaged groups] equality. (1 = *Not at all* to 7 = *Very much*)	Adapted from Van Zomeren, Postmes, Spears, & Bettache (2011). CFA: 2 factor solution: low vs. high cost behavior.
2) High cost collective action	Would you like to engage in the following activities in the future? 1) Attending meetings or workshops regarding the unequal treatment of [disadvantaged group]. 2) Writing letters to public officials or other people of influence to protest against the unequal treatment of [disadvantaged group]. 3) Attending demonstrations, protests or rallies against the unequal treatment of [disadvantaged group]. (1 = *Not at all* to 7 = *Very much*)	Adapted from van Zomeren et al. (2011). CFA: 2 factor solution: low vs. high cost behavior.
3) Support for empowering policies	1) [Disadvantaged group] should obtain much more power in the decision-centers of our society. 2) Institutions of my country should allocate more places to [disadvantaged group] as a form of affirmative action. 3) The State budget should be distributed equally so that the resources that are allocated to [disadvantaged group] are proportional to those that are allocated to [advantaged group]. (1 = *Strongly disagree* to 7 = *Strongly agree*)	Shnabel, Dovidio, & Levin (2016)
4) Raising ingroup awareness	When I come into contact with ingroup members, we talk about… 1) … injustices in society regarding [disadvantaged group]. 2) … personal experiences with discrimination against [disadvantaged group]. 3) … the existence of [advantaged groups] privilege. (1 = *Not at all* to 7 = *Very often*)	Adapted from Saguy, Dovidio, & Pratto (2008)
5) Working in solidarity	1) How willing are you to cooperate with [participants' outgroup] to work for justice for [disadvantaged group]?	Based on Glasford & Calcagno's (2012)

	2) How willing are you to unite with [participants' outgroup] to work for justice for [disadvantaged group]? 3) How willing are you to protest alongside [participants' outgroup] to work for justice for [disadvantaged group]? (1 = *Not at all* to 7 = *Very much*)	conceptualizatio n of group-based solidarity
Attention Check	1) When you have read this item, please select the second point on the scale (to the right of 'Strongly disagree'). 2) When you have read this item, please select the sixth point on the scale (to the left of 'Strongly agree').	

Note. †Quantity of contact and quantity of indirect outgroup friends were not included among LGBTIQ+ individuals. Unless indicated otherwise, the final scales and items were identical across the four populations and were assessed on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Participants' outgroups and ingroups were adapted to the specific context. Apart from this, all measures and items were identical across the four populations.

Table S14
Descriptive Statistics – Advantaged Groups

Construct Scale	Ethnic Majorities					Cis-Heterosexuals				
	N	Items	*M*	*SD*	*Alpha*	*N*	Items	*M*	*SD*	*Alpha*
Intergroup contact										
Quantity of contact	3,216	2	4.04	1.87	.60	4,898	2	4.24	1.82	.64
Positive contact	2,964	3	5.24	1.42	.86	4,429	3	6.08	1.05	.81
Absence of negative contact	2,963	2	5.87	1.41	.86	4,428	2	6.37	1.07	.79
Number of outgroup friends	2,964	1	1.73	1.01	–	4,429	1	1.97	0.88	–
Frequency of meeting OG friends	1,500	1	4.65	1.57	–	4,252	1	4.13	1.90	–
Quantity of indirect OG friends	3,207	1	2.74	1.62	–	4,898	1	3.22	1.74	–
Positive indirect contact	3,204	1	3.68	1.92	–	4,896	1	4.31	2.08	–
Absence of indirect negative contact	3,206	1	5.79	1.42	–	4,896	1	6.44	0.92	–
Support for social change										
Low cost collective action	3,216	3	3.66	2.02	.85	4,897	3	4.23	2.04	.84
High cost collective action	3,215	3	2.66	1.69	.89	4,898	3	2.93	1.77	.87
Support for empowering policies	3,216	3	4.14	1.55	.76	4,897	3	4.60	1.53	.77
Raising ingroup awareness	3,180	3	2.56	1.47	.85	4,896	3	2.59	1.45	.86
Working in solidarity	3,200	3	4.40	1.75	.91	4,898	3	4.70	1.79	.92

Note: OG = Outgroup.

Table S15
Descriptive Statistics – Disadvantaged Groups

Construct Scale	Ethnic Minorities					LGBTIQ+ Individuals				
	N	Items	*M*	*SD*	*Alpha*	*N*	Items	*M*	*SD*	*Alpha*
Intergroup contact										
Quantity of contact	1,000	2	6.16	1.37	.61	–	–	–	–	–
Positive contact	988	3	5.46	1.33	.84	3,838	3	5.75	1.15	.83
Absence of negative contact	987	2	5.85	1.31	.79	3,837	2	5.78	1.24	.80
Number of outgroup friends	988	1	3.41	1.78	–	3,839	1	4.78	1.45	–
Frequency of meeting OG friends	849	1	4.73	1.70	–	3,832	1	5.90	1.14	–
Quantity of indirect OG friends	1,000	1	4.15	1.87	–	–	–	–	–	–
Positive indirect contact	999	1	4.61	1.75	–	3,881	1	5.67	1.35	–
Absence of negative indirect contact	1,000	1	5.13	1.60	–	3,880	1	4.00	1.99	–
Support for social change										
Low cost collective action	1,000	3	4.36	2.00	.82	3,882	3	5.64	1.49	.68
High cost collective action	1,000	3	3.64	2.03	.91	3,883	3	4.59	1.76	.82
Support for empowering policies	1,000	3	5.11	1.46	.73	3,883	3	5.45	1.30	.67
Raising ingroup awareness	1,000	3	3.66	1.86	.91	3,881	3	4.48	1.66	.89
Working in solidarity	914	3	5.59	1.56	.90	3,883	3	6.23	1.15	.86

Analytic Procedure

The analytic procedure is depicted in Figure S2 (see above). We first created residualized items by removing the sample means, then selected the final set of items and scales using CFA, and finally applied specification curve for the main analyses reported in the paper.

Residualization

We included heterogenous convenience samples from diverse countries. Hence, we expected variance between samples. We regressed the original items on the subsample identifier variable and used the residualized items in the CFA and main analyses to separate out this between-sample variance. Thus, we tested the hypotheses at the level of individuals instead of samples.

Confirmatory Factor Analysis and Final Scale Construction

We ran CFAs, separately for the four populations and separately for all the contact items (one set of analysis) and for all the support for social change items (one set of analysis).

Starting Models.

For *support for social change*, we started with the measurement model postulated in the preregistration. For *intergroup contact,* we deviated from the preregistration in two ways: First, as the present paper focuses only on *intergroup contact* and *support for social change*, we could also include the three *indirect contact* items (*quantity of indirect outgroup friends*, *positive indirect contact*, and *negative indirect contact*) which were not meant to be included in the full model described in the preregistration. Second, based on theoretical considerations, we used the following scales as a starting point of the CFA: *quantity of contact* (not included for LGBTIQ+ individuals), *positive contact*, *negative contact*, *number of outgroup friends*, *frequency of meeting outgroup friends*, *quantity of indirect outgroup friends* (not included for LGBTIQ+ individuals), *positive indirect contact*, and *negative indirect contact*. The final

scale names *absence of negative contact* and *absence of negative indirect contact* result from recoding items which originally measured *negative contact* and *negative indirect contact*. Based on our a priori hypotheses, (positive) *intergroup contact* was expected to correlate positively with *support for social change* among advantaged groups and negatively among disadvantaged groups. The reverse coded versions of the *negative (indirect) contact* measures allowed us to derive reasonable and accurate conclusions from the results of our specification curve analysis. Next, we checked for both constructs whether the items would form unidimensional scales as expected separately for each of the four populations.

Refined Models.

As described in Figure S2, we adapted the measurement models if the model fit did not meet the following criteria of acceptable model fit suggested by Hu and Bentler (1999): CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. As postulated a priori, we aimed to use as many items as possible without reducing model fit below the above cutoff points. We further aimed to be consistent among the four populations (i.e., to include the same items and scales among all four populations). When the planned set of items and scales failed to produce a satisfactory model fit, we deleted or rearranged items or scales until model fit for the specific construct within each population was satisfactory. Importantly, these analyses were carried out separately for each construct and population so that we would not be aware of the relation between constructs when deciding on the items to be used for the main analyses. All steps of the CFAs can be reproduced with the file `Scale_Construction_CFA.R`, which can be found here: https://osf.io/8rcz9/?view_only=fd97cc15ba5f4874ad024680ca720bad

The CFAs of the refined models suggested acceptable model fit for the measurement models of *support for social change* and *contact* for all four populations. The only exception was the measurement model for *contact* among cis-heterosexuals where we found a slightly

too high RMSEA value (0.071). To keep the scales consistent between the populations, we decided to go along with this value. See Table S4 for a detailed overview of the final set of scales and items.

Specification Curve Analysis

In order to estimate the bivariate correlations between intergroup contact and support for social change conditional on methodological choices, we conducted specification curve analyses following Simonsohn and colleagues' procedure (Simonsohn, Simmons, & Nelson, 2015). All steps of the specification curve analysis can be reproduced with the `Master_Script.R` (lines 1-239) and the underlying `Functions.R` script. The files and the aggregated dataset underlying the specification curve analysis as well as the corresponding codebook can be found online (https://osf.io/m5pb6/?view_only=fd97cc15ba5f4874ad024680ca720bad).

Specification curve analysis allows for both confirmatory and exploratory research. Although both types of research are equally valuable (e.g., Nosek, Ebersole, DeHaven, & Mellor, 2017; Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2011), it is important to clearly demarcate confirmatory research (here: testing our a priori hypotheses regarding the asymmetrical contact effect) from exploratory research (here: exploring the influence of choices regarding operationalizations and analytic decisions). Figure S3 shows our implementation of specification curve analysis, which can be subdivided into (1) estimating the bivariate correlations, (2) confirmatory analysis, and (3) exploratory analysis.

Step 1: Estimating the bivariate correlations

1a: Identifying/defining the set of reasonable specifications

5 (measures of support for social change) x 8 [6] (measures of intergroup contact) x 2 (attention check failures included/excluded) x 2 (outliers included/excluded) = 160 [120] model specifications

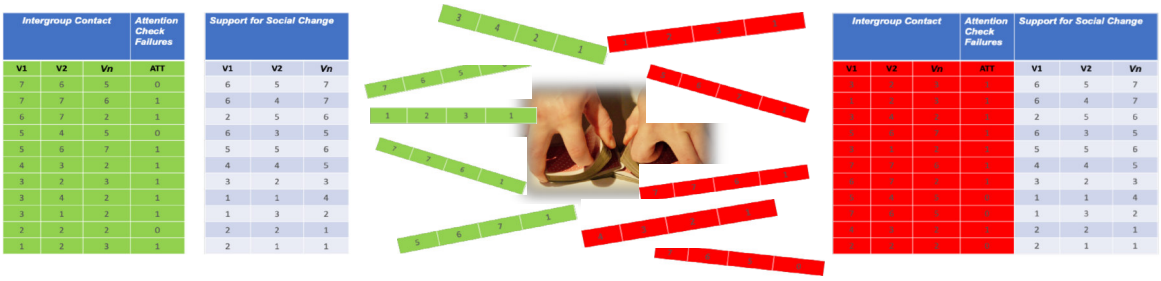
1b: Estimating the results for all model specifications

How many of the 160 [120] model specifications produce statistically significant results?
E.g., 64 of the 160 model specifications show a significant correlation in the predicted direction.

Step 2: Confirmatory analysis

2a: Creation of 1000 shuffled datasets

How many significant model specifications do we find by chance in each of the 1000 shuffled datasets?
E.g., shuffled dataset 1: 17 out of 160, shuffled dataset 2: 5 out of 160, …



Note: Colored in green: All predictor variables before shuffling. Colored in red: Randomly reordered values of the predictor variables.

2b: Joint significance test

Divide the number of shuffled datasets with at least as many significant model specifications as in the original dataset by the number of shuffled datasets, e.g.:

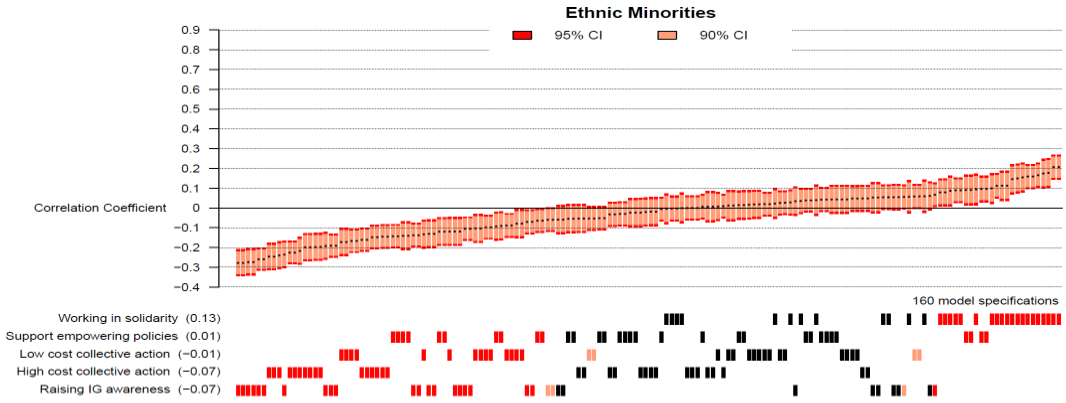
I. 200 of 1000 shuffled datasets have at least 64 significant effects.
This leads to a *p*-value for the joint test of $p = .20$.

II. Zero of 1000 shuffled datasets have at least 64 significant effects.
This leads to a *p*-value for the joint test of $p < .001$.

Step 3: Exploratory analysis

3a: Visual inspection of the specification curve

E.g., where do effects of *working in solidarity* cluster?



3b: Meta-regression

To guide, substantiate, and complement the visual inspection.

Figure S21. Specification curve analysis.

Step 1: Estimating the bivariate correlations.

Specification curve analysis entails reporting the results of all reasonable model specifications instead of focusing on a small subset thereof (Simonsohn et al., 2015). To do so, one needs to first identify and define relevant specification factors. Besides testing the influence of using particular measures of *intergroup contact* and *support for social change*, we also tested the impact of two analytic decisions: the inclusion or exclusion of attention check failures as well as outliers. Thus, we identified four specification factors: the operationalization of 1) *intergroup contact*, 2) *support for social change*, and the in- or exclusion of 3) *attention check failures*, and 4) *outliers*. After determining the specification factors, the set of possible choices for each specification factor has to be defined. Please refer to Table S7 for an overview of our four specification factors.

Table S16
Overview of Specification Factors

	Specification Factor II Measure of Support for Social Change	**Specification Factor III** Analytic Decision I: In-/Exclusion of Attention Check Failures	**Specification Factor IV** Analytic Decision II: In-/Exclusion of Statistical Outliers
1) Quantity of contact† 2) Positive contact 3) Absence of negative contact 4) Number of outgroup friends 5) Frequency of meeting outgroup friends 6) Quantity of indirect outgroup friends† 7) Positive indirect contact 8) Absence of negative indirect contact	1) Low cost collective action 2) High cost collective action 3) Support for empowering policies 4) Raising ingroup awareness 5) Working in solidarity	1) Inclusion 2) Exclusion	1) Inclusion 2) Exclusion
8 (intergroup contact measures [6 for LGBTIQ+ individuals]) x 5 (support for social change) x 2 (attention check failures) x 2 (statistical outliers) = 160 [120] model specifications			

Note: †: not included among LGBTIQ+ individuals.

The first specification factor consists of eight [six for LGBTIQ+ individuals] measures of *intergroup contact*, the second specification factor of five measures of *support for social change* (see Table S4 for an overview of these measures and Table S5 for descriptive statistics among advantaged groups and Table S6 for descriptive statistics among disadvantaged groups). The third specification factor refers to the decision to include or exclude participants who failed at least one of two attention check items (12.6% of our participants). The fourth specification factor concerns the decision to include or exclude statistical outliers. In the preregistered analysis plan, we defined outliers as values at least three times the interquartile range away from the end of the box in Tukey's boxplot. Each specific combination of one measure of *intergroup contact* and one measure of *support for social change*, as well as a decision to remove (or not) participants failing the attention check and to remove (or not) statistical outliers constitutes a model specification. This resulted in 8 [6 for LGBTIQ+ individuals] (intergroup contact measures) × 5 (support for social change measures) × 2 (attention check failures included/excluded) x 2 (outliers included/excluded) = 160 [120] model specifications.

Each model specification constitutes a different way to test our hypotheses that *intergroup contact* and *support for social change* are positively related among advantaged groups (i.e., ethnic majorities and cis-heterosexuals) and negatively related among disadvantaged groups (i.e., ethnic minorities and LGBTIQ+ individuals). We conducted an *individual* significance test for *every single* model specification. We performed one-tailed tests using an alpha of .05 for the confirmatory tests in line with the preregistered directional hypotheses. For example, in Figure S3, 64 of 160 model specifications produced statistically significant bivariate correlations between *intergroup contact* and *support for social change* in the predicted direction (i.e., negative correlations; see Table 2 in the main article).

Step 2: Confirmatory analysis.

The goal of the confirmatory analysis was to test the overall hypothesis that *intergroup contact* predicts *social change* positively for advantaged groups and negatively for disadvantaged groups, using the joint significance test proposed by Simonsohn and colleagues (2015), which can be summarized as follows.

To determine how many model specifications would lead to significant correlations under the null hypothesis (i.e., by chance), we used a procedure called "shuffling" which (a) separates the dependent and independent variables in the dataset, (b) randomly reorders the values of the predictor variables, and (c) puts the dependent and the independent variables back together again (see Figure S3). After shuffling, the data still have the same features as before (e.g., skewness, collinearity), but it is guaranteed that there is no linear relationship between the independent and the dependent variables. We then recalculated the bivariate correlations and significance tests from Step 1 for all 160 [120] model specifications using this shuffled dataset. We repeated this procedure 1,000 times. For example, in the first shuffled dataset, 17 out of 160 model specifications might produce significant correlations in the predicted direction, in the second shuffled dataset, 5 out of 160, and so on. We then counted how many of these analyses using shuffled datasets produced at least as many significant correlations as the observed dataset, e.g., at least 64 significant correlations. The *p*-value of this joint significance test was calculated by dividing this number by the total number of shuffled datasets (i.e., 1,000). With 1,000 shuffled datasets, the smallest estimate of the *p*-value is $p < .001$ if none of the 1,000 shuffled datasets produced at least as many significant correlations as the observed data set. (i.e., $p < 1/1{,}000$). We rejected the null hypothesis whenever this proportion was less than .05. For example, if 200 of 1,000 shuffled datasets would have led to at least 64 significant correlations, the *p*-value would have been $p = 200/1{,}000 = .20$. Thus, we would not have rejected the null hypothesis.

In our four populations, none of the 1,000 shuffled datasets produced at least as many significant correlations as the original data. This led to a *p*-value of $p < .001$ in all four populations (see Table 2 in the main article). We therefore rejected the null hypothesis that the number of significant correlations in the predicted direction observed in our original datasets occurred by chance.

Step 3: Exploratory analysis.

Step 3a: Visual inspection of the specification curve.

The goal of the exploratory analysis was to understand in more detail how results depend on model specifications. For this purpose, we first displayed the correlations from Step 1 (see above) in descriptive specification curves (see Step 3a in Figure S3; Figures 1 and 2 in the main article). The top part of a descriptive specification curve shows sorted point estimates of the correlations between *intergroup contact* and *support for social change* and 90% (95%) confidence intervals in light (dark) red. The bottom part shows the so-called dashboard: It indicates the combination of measures and analytic decisions (i.e., the model specifications) underlying a specific correlation. Black bars indicate model specifications that produced non-significant correlations, light red bars indicate one-tailed significance (since we formulated and preregistered directional hypotheses), dark red bars indicate two-tailed significance. The exploratory analysis involved a visual examination of the descriptive specification curve. For example, when looking at the descriptive specification curve for ethnic minorities (see Figure S3; Figure 2A in the main article), one might notice that all model specifications which produced the largest positive effects contain *working in solidarity* as a measure of *support for social change.*

Step 3b: Meta-Regression.

Since visual inspection is crude, we quantified the influence of the choices regarding measures on the effect sizes using meta-regression. We regressed the 160 [120] effect sizes

on the (effect-coded) specification factors Measure of Support for Social Change, Measure of Intergroup Contact, Exclusion of Attention Check Failures, Exclusion of Outliers. The underlying regression for each of the four populations is[27]:

$$\textit{Predicted Effect Size} = b_0 + b_1 * \text{Effect Coded Specification Factor I: Support for Social Change } (b_{0j} + b_{1j} * \text{DV2} + b_{2j} * \text{DV3} + b_{3j} * \text{DV4} + b_{4j} * \text{DV5}) + b_2 * \text{Effect Coded Specification Factor II: Intergroup Contact } (b_{0k} + b_{1k} * \text{IV2} + b_{2k} * \text{IV3} + b_{3k} * \text{IV4} + b_{4k} * \text{IV5} + b_{5k} * \text{IV6} + b_{6k} * \text{IV7†} + b_{7k} * \text{IV8†}) + b_3 * \text{Effect Coded Specification Factor III: Attention Check Failures } (b_{0l} + b_{1l} * \text{ACF}) + b_4 * \text{Effect Coded Specification Factor IV: Outliers } (b_{0m} + b_{1m} * \text{O})$$

Note: † Not included among LGBTIQ+ individuals. DV = Dependent variable, IV = Independent variable, ACF = Attention Check Failures, OUT = Outliers.
We effect coded the variables for each specification factor. We used the first measurement variable as the reference category or Factor I and II. For the analytical decision we used 'inclusion' of all participants as reference category. The constant within a specification factor represents the grand mean of this respective specification factor. The coefficient of each of the effect variables is equal to the difference between the grand mean and the mean of the variable. To estimate the reference category, all of the coefficients within one specification factor are summed and multiplied by -1.

The coefficients from this regression allow us to quantify the predicted change in effect size resulting from using one particular measure rather than using all measures within a given specification factor and averaging over the effect sizes. Results of these meta-regressions are reported in Table S8 (and in Figures 1 and 2 in the main paper). The significance test for these coefficients draws on the distribution of the coefficients resulting from meta-regressions run on 1,000 shuffled datasets. We counted how often a particular coefficient

[27] The high correlations between the observed effect sizes and the predicted effect sizes for each population (i.e., $r_{\text{ethnic minorities}} = .90$, $r_{\text{LGBTIQ+ individuals}} = .96$, $r_{\text{ethnic majorities}} = .90$, $r_{\text{cis-heterosexuals}} = .96$) indicate that the specification factors explain the effect sizes well even without including interaction effects. Indeed, main effects alone explained more than 80% of the variance in effect sizes among each population (see Table S9).

deviated from zero at least as much as in the original dataset. We rejected the null hypothesis that this deviation occurred by chance whenever this proportion was less than .05. This second permutation test allows us to quantify the influence of using a specific measure of contact or support for social change on the effect sizes. For example, for ethnic minorities (see Table S8; Figure 2A in the main article), *working in solidarity* produced a significantly larger effect than the grand mean of effects. In the dashboard of our descriptive specification curves, the measures of *intergroup contact* and *support for social change* are ordered by the size of the coefficients. The majority of deviations were statistically significant (see Table S8), indicating that the different operationalizations affected the size of predicted effects. Moreover, some deviations from the grand mean were consistent across all four populations: Among measures for support for social change w*orking in solidarity* produced a significant larger effect than the grand mean of support for social change effects. By contrast, *raising ingroup-awareness* produced significantly smaller effects than the grand mean of effects. With regard to measures of contact, *positive indirect contact* produced significant larger and *absence of negative indirect contact* significant smaller effects than the grand mean of contact effects. Other measures led to inconsistent patterns between the four populations.

Table S17
Results from Meta-Regression: Deviations from the Grand Mean

	Ethnic Majorities		Cis-Heterosexuals		Ethnic Minorities		LGBTIQ+ Individuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Working in solidarity	0.07	<.001	0.08	<.001	0.13	<.001	0.15	<.001
Raising ingroup awareness	-0.09	<.001	-0.12	<.001	-0.07	<.001	-0.10	<.001
High cost collective action	-0.00	.469	0.00	.850	-0.07	<.001	-0.05	<.001
Support for empowering policies	0.01	.081	0.01	.041	0.01	.404	-0.01	.059
Low cost collective action	0.01	.020	0.04	<.001	-0.01	.662	0.02	.009
Intergroup Contact								
Quantity of contact	-0.04	<.001	0.10	<.001	0.08	<.001	–	–
Positive contact	0.13	<.001	0.06	<.001	-0.02	.119	0.01	.370
Positive indirect contact	0.04	<.001	0.04	<.001	0.06	<.001	0.10	<.001
Number of OG friends	-0.01	.254	0.02	.003	-0.05	.008	-0.04	<.001
Frequency of meeting OG friends	-0.11	<.001	0.02	.070	0.09	<.001	0.08	<.001
Quantity of indirect OG friends	-0.04	<.001	0.00	.943	0.03	.053	–	–
Absence of negative contact	0.05	<.001	-0.02	.019	-0.07	.002	-0.01	.546
Absence of negative indirect contact	-0.02	.093	-0.22	<.001	-0.12	<.001	-0.14	<.001

Note. *b* = unstandardized regression coefficient, *p* = *p*-value from permutation test. Given the negligible effect sizes of the influence of analytic decisions (i.e., exclusion of statistical outliers and attention check failures) we did not conduct significance tests for these coefficients.

Cross-Validation

The meta-regressions help to answer the question how the effect sizes of the correlation between contact and support for social change depend on the specific operationalization of these constructs. It is instructive to compare the answers to this question across the four populations. We expected to find similar answers for ethnic majorities and cis-heterosexuals (being both advantaged groups) and similar answers for ethnic minorities and LGBTIQ+ individuals (being both disadvantaged groups).

As a method of cross-validation we used the coefficient estimates from one group (e.g., ethnic minorities) to generate predicted values of effect sizes in another group (e.g., LGBTIQ+ individuals). The meta-regression can be reproduced with the file `Master_Script.R` (line 242-281), which can be found online at: https://osf.io/8rcz9/?view_only=fd97cc15ba5f4874ad024680ca720bad. The strong positive correlations between these predicted values and the actual effect sizes (see Table S9) indicate that the results depend on the specification factors in broadly similar ways across both

disadvantaged groups (correlation between ethnic minority model and predicted data of LGBTIQ+ individuals $r = .90$, and vice versa $r = .85$). Among advantaged groups we find a smaller degree of cross-validation compared to disadvantaged groups (correlation between ethnic majority model and predicted data of cis-heterosexuals $r = .45$, and vice versa $r = .42$; see also Table S9).

This is reflected in the greater variance of the effects of intergroup contact measures among both advantaged groups (see Figures 1A and 1B in the main paper): While the measure *absence of negative contact* produced larger positive correlations among ethnic majorities, correlations involving this measure of contact were more scattered among cis-heterosexuals. In contrast, while model specifications including the measure *absence of negative indirect contact* consistently produced the smallest positive (and, indeed, a few negative) correlations among cis-heterosexuals, the same model specifications produced more varied correlations among ethnic majorities. Finally, while model specifications including the measure *frequency of meeting outgroup friends* were consistently associated with smaller positive correlations among ethnic majorities, the same model specification produced more varied correlations among cis-heterosexuals.

Table S18
Explained Variance and Cross-validation

Model/ Predicted data	Data – Ethnic minorities	Data – LGBTIQ+ individuals	Data – Ethnic majorities	Data – Cis-Heterosexuals
Model – Ethnic minorities	.90 (R^2 = .81)	.90	.15	.69
Model – LGBTIQ+ individuals	.85	.96 (R^2 = .92)	.38	.78
Model – Ethnic majorities	.15	.40	.90 (R^2 = .80)	.45
Model – Cis-Heterosexuals	.65	.78	.42	.96 (R^2 = .92)

Note. The table shows correlations between the observed effect sizes and the predicted effect sizes based on the coefficients of the meta-regression of effect sizes on specification factors. The correlations on the main diagonal correspond to the multiple correlation *R*. The squared correlation between the observed data and the predicted data within one sample is the variance explained only by the main effects. Off diagonal correlations indicate cross-validation with model and data from different groups. All correlations involving LGBTIQ+ coefficients or data exclude quantity of direct or indirect contact.

Deviations from the Preregistration

A complete list of deviations from the preregistration plan (https://osf.io/6hfcu/) is provided in Table S10.

Table S19
Summary of all Deviations Between the Preregistration as Filed and the Final Publication

Preregistration	Publication: How does contact between advantaged and disadvantaged groups predict support for social change?	Comment
Planned included constructs: Intergroup contact, support for social change, group-specific need satisfaction, perceived illegitimacy	*Final included constructs:* Intergroup contact, support for social change	This is a concise summary of the main results of this project. All remaining results will be reported in a separate publication.
Planned included measures: Intergroup contact: Only direct contact	*Final included measures:* Intergroup contact: Direct and indirect contact	Running the model without group-specific need satisfaction (which refers to need satisfaction during direct contact only) enabled us to include additional measures that could not be included in the full model because the interaction terms could not be properly constructed.
Planned data collection: June 2016 until 15th of April, 2017	*Final data collection:* June 2016 to 15th June, 2017	The data collection was extended to include participants recruited via PlanetRomeo (largest social network for gay, bisexual and transgender men). We expected to reach more participants from populations which are usually underrepresented in academic studies.
Planned sample: Participants from 18 ethnic majority samples, 10 ethnic minority samples, 18 sexual and gender minority samples, 18 cis-heterosexual samples.	*Final sample:* All participants from the four populations of interest (ethnic majority members, ethnic minority members, LGBTIQ+ individuals, cis-heterosexuals) were included.	Due to widespread dissemination of the link to the survey, individuals from additional countries participated in the survey. However, we did not include participants with double group-membership or implausible data (e.g., country = "Helicopter") at the population level.
Planned sample inclusion: At least 100 usable participants per sample	*Final sample inclusion:* No minimum sample size	The hypotheses reported in this publication are tested at the level of individuals (using residualized variables) instead of samples. Therefore, we were able to also include participants from smaller samples.
Planned exclusion of participants: Everyone without outgroup contact.	*Final exclusion of participants:* Participants with more than 20% missingness on relevant items (contact and support for social change items).	In this publication, we only report the relation between intergroup contact and support for social change. This allowed us to also include participants who reported having no contact with the respective outgroup. To assure data quality, we excluded participants with more than 20% missingness on the relevant items.

Planned confirmatory factor analysis: Criterion: Use as many items as possible without reducing model fit below the following cutoff points as suggested by Hu and Bentler (1999): a CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of less than .08 as well as χ^2/df ratio of less than 3 indicates (Kline, 1998).	*Final confirmatory factor analysis:* Criterion: Use as many items as possible and keep scales consistent across groups without reducing model fit below the following cutoff points: CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. Exception: The measurement model for contact had a slightly too high RMSEA value (0.071) among cis-heterosexuals.	We never reached a χ^2/df ratio of less than 3. However, the χ^2 statistics has been criticized because it tends to inflate when there is a large sample size (Newsome, 2015). Thus, we referred to the CFI, RMSEA, and SRMR. Regarding cis-heterosexuals: We decided that not reaching the targeted RMSEA in one population is preferable to excluding further scales/items among cis-heterosexuals or all four populations.
Planned initial measurement model for contact: Two different measures of intergroup contact: 1) Contact quality 2) Contact quantity (4 items, i.e., frequency of contact with OG, number of acquaintances, relative number of friends, frequency of meeting with friends).	*Initial measurement model for contact:* Eight different measures of intergroup contact: 1) Quantity of contact (not included among LGBTIQ+ individuals) 2) Positive contact 3) Absence of negative contact (negative contact, recoded) 4) Number of outgroup friends 5) Frequency of meeting outgroup friends 6) Quantity of indirect outgroup friends (not included among LGBTIQ+ individuals) 7) Positive indirect contact 8) Absence of negative indirect contact (negative indirect contact, recoded)	Experts on intergroup contact among our collaborators raised theoretical concerns regarding our planned operationalization of intergroup contact during our second project meeting (January, 2018). Hence, we deviated from the proposed starting point in the construction of the intergroup contact scales. The goal was to better represent the typical operationalizations used in the literature. Further, we added three items assessing various forms of indirect contact (see above). Finally, we excluded scales assessing both quantity of contact and quantity of indirect outgroup friends among LGBTIQ+ individual because almost every LGBTIQ+ individual has more cis-heterosexual friends than 10 (i.e., the highest scale value) or LGBTIQ+ friends who have more than 10 cis-heterosexual friends.
Planned model underlying specification curve analysis: Multilevel model	*Final model underlying specification curve analysis:* Bivariate correlations	We used residualized items to separate out the between-sample variance to test the hypotheses at the level of individuals instead of samples.

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Supplementary Materials for

The role of empowering and accepting intergroup contact in promoting social change toward greater equality

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Data and materials have been deposited on the Open Science Framework under the following link https://osf.io/mdngf/?view_only=81fdd2dccb5c4b319033a83183eb48b5. Since our participants only consented to having their data published in aggregated form and publishing the raw data may pose a threat to the confidentiality and safety of the participants, we published item-level-residualized data only. That is, each variable containing participants' responses was subjected to a one-way ANOVA using the subsample identifier variable as factor. The residuals of this ANOVA were used for all analyses reported in the paper.

Summary of Deviations from the Preregistration

The main difference between the plan as filed (see https://osf.io/6hfcu/) and the publication is that we used item-level-residualized versions of all variables. As mentioned, we regressed the original items on the subsample identifier variable to obtain residualized item scores. So, this item-level residualization removed subsample mean differences from item scores. The residualized items enabled us to test the postulated model at the level of individuals rather than at the level of subsamples or countries. Residualizing the items instead of conducting multilevel modeling with random intercepts was done to guarantee the confidentiality and safety of the participants while increasing the transparency/reproducibility of reported analyses.

Based on theoretical considerations, we also deviated from the proposed starting point in the construction of the intergroup contact scales and excluded two items among LGBTIQ+ individuals (see Table S27). Finally, we observed strong correlations between the measures of satisfaction of acceptance and empowerment needs in all populations (see Table S24 for disadvantaged groups and Table S25 for advantaged groups). Therefore, in the interest of more accurate tests of the hypotheses, we decided to deviate from the preregistration by using residualized versions of the need satisfaction scale variables (scale-level needs

residualization; in each case controlling for the other need). For a detailed overview see Table S27. The main conclusions remain unaltered by these changes.

Recruitment and Exclusion of Participants

We collected the data between June 2016 and June 2017. We recruited participants through online platforms (e.g., social networking sites, snowball sampling, and contacting relevant organizations) to voluntarily complete our survey online, and on university campuses or on the street to voluntarily complete paper/pencil surveys. Participants were told that they would complete a study about relations between different groups in society. They completed the survey either for (a) course credits or (b) a chance to win one of two vouchers worth 250 Euros or one of twenty vouchers worth 50 Euros. Upon completion, participants were thanked and debriefed. All participants consented to their data being used for research purposes as well as being published in anonymized and aggregated form.

Figure S22 depicts the exclusion process.[28] The first filter excluded participants who had not completed the questionnaire up to the point where all items relevant to this study would have been assessed. The second filter excluded all subsamples with less than 100 participants. The third filter excluded participants with at least one missing value on the following items: (a) the first *quantity of contact* item (How often do you interact with [outgroup]?), (b) *number of outgroup friends* (How many of your friends are [outgroup]?), and (c) the attention check items. The fourth filter excluded all participants without outgroup contact (see Table S4 for measures and items). The fifth filter excluded all participants who had not answered 20% (or more) of the items used in the analyses, i.e., all *intergroup contact* (without the *frequency of meeting outgroup friends* item for participants without outgroup friends, without the two *quantity of contact* items for LGBTIQ+ individuals)*, group-specific*

[28] During the data preparation process, we excluded a few additional cases: test persons, participants indicating being younger than 16, participants who entered impossible values for age and/or country. Since the legal rights of LGBTIQ+ people vary between countries, we also excluded participants indicating a dual group membership (e.g., residency in two countries).

need satisfaction, perceived illegitimacy, and *support for social change* items (see Table S4 for relevant items).

Sample

Our sample includes 62 samples from 23 countries (N = 11,211). The sample is made up of 689 ethnic minority group members, 3,382 LGBTIQ+[29] individuals, 2,937 ethnic majority group members, and 4,203 cis-heterosexuals. For more detailed information on the composition of our sample and each of the four populations (i.e., ethnic minorities, LGBTIQ+ individuals, ethnic majorities, and cis-heterosexuals), please refer to Table S1 for the ethnic context and Table S2 for the LGBTIQ+ context. The LGBTIQ+ population is further specified in Table S3, which contains the frequencies of LGBTIQ+ subgroups based on sexual orientation and gender identity.

[29] The term LGBTIQ+ denotes individuals identifying as lesbian, gay, bisexual, transgender, intersexual, queer, or other sexual and gender minorities.

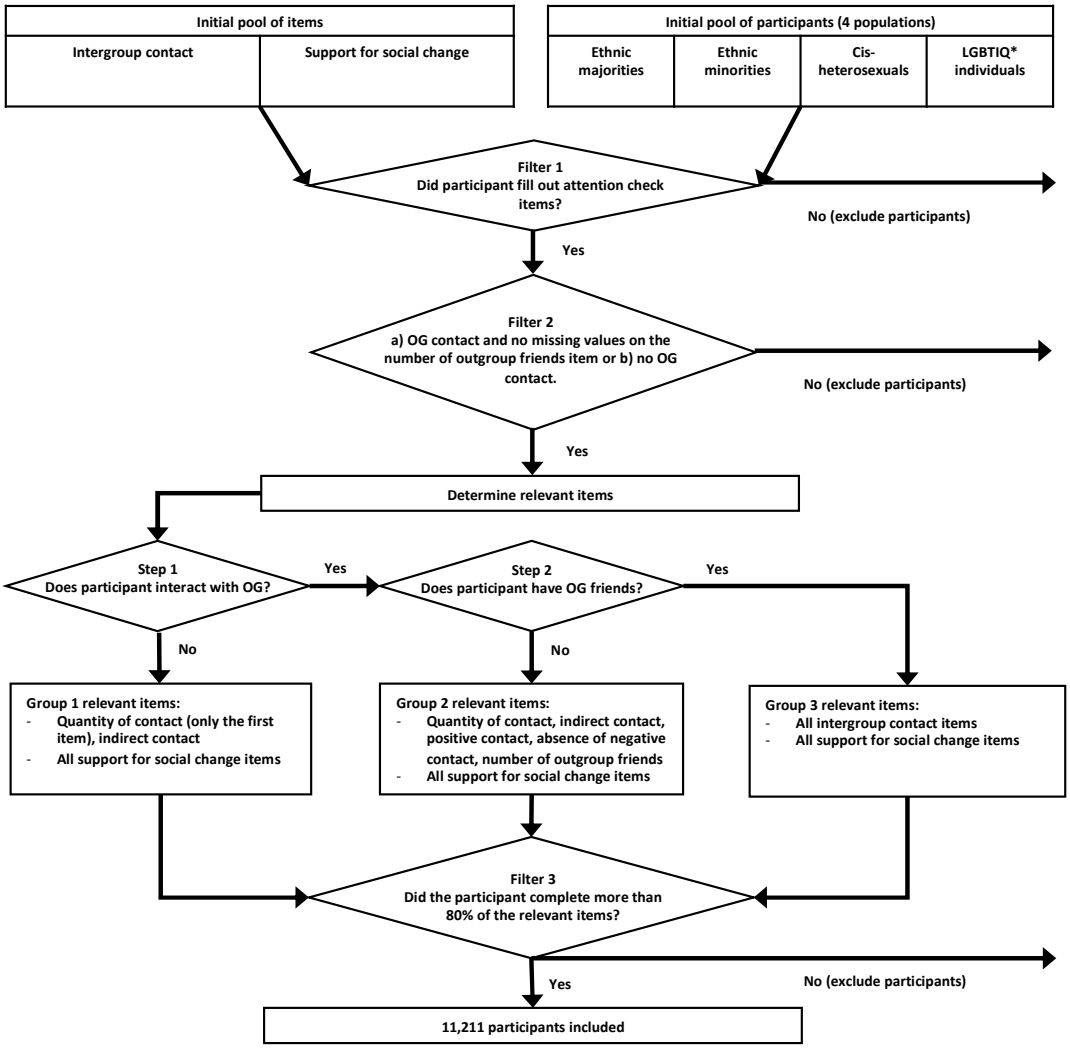


Figure S22. Inclusion of participants

Table S20
Overview of Included Samples - Ethnic Context

		Ethnic Majorities			Ethnic Minorities		
Category	**Country**	***N***	**Mean Age (*SD*)**	**Gender**	***N***	**Mean Age (*SD*)**	**Gender**
Belgians / Moroccans	Belgium	101	18.64 (2.15)	male = 0, female = 101, other = 0	--	--	--
Whites / Blacks	Brazil	166	32.37 (12.13)	male = 37, female = 128, other = 1	--	--	--
Non-Indigenous / Mapuche	Chile	165	27.92 (8.86)	male = 59, female = 106, other = 0	118	30.03 (10.11)	male = 55, female = 62, other = 0, na = 1
Chileans / Peruvians	Chile	132	30.89 (14.20)	male = 57, female = 74, other = 1	127	33.10 (12.02)	male = 59, female = 67, other = 0 na = 1
Non-Muslims / Muslims	Germany	192	31.98 (11.99)	male = 68, female =121, other = 3	110	31.94 (11.35)	male = 70, female =39, other = 1
Germans / Refugees	Germany	142	29.15 (13.47)	male = 34, female = 106, other = 2	--	--	--
Germans / Refugees	Germany	175	35.50 (12.17)	male = 95, female = 80, other = 0	--	--	--
Germans / Turks	Germany	205	34.71 (12.03)	male = 120, female = 85, other = 0	--	--	--
Israelis / Arabs	Israel	117	24.55 (2.39)	male = 34, female = 83, other = 0	--	--	--
Israelis / Ethiopians	Israel	97	25.90 (4.78)	male = 38, female = 59, other = 0	--	--	--
Albanians / Serbs	Kosovo	66	20.59 (1.69)	male = 10, female = 56, other = 0	102	24.82 (4.95)	male = 40, female = 62, other = 0
Polish / Ukrainians	Poland	134	36.23 (12.91)	male = 66, female = 68, other = 0	--	--	--
Serbs / Bosniaks	Serbia	106	21.38 (2.12)	male = 20, female = 86, other = 0	--	--	--

Spaniards / Sinti & Roma	Spain	508	24.35 (7.54)	male = 159, female = 345, other = 0, na = 4	--	--	--
Non-Muslims / Muslims	Switzerland	118	28.31 (11.93)	male = 36, female = 81, other = 1	--	--	--
Swiss / Portuguese immigrants	Switzerland	129	29.24 (10.88)	male = 32, female = 97, other = 0	--	--	--
Non-Muslims / Muslims	United Kingdom	148	36.42 (12.05)	male = 71, female = 76, other = 1	--	--	--
British / Asians	United Kingdom	101	21.20 (7.25)	male = 23, female = 78, other = 0	126	21.51 (5.79)	male = 21, female = 105, other = 0
Whites / Blacks	United States	135	20.07 (1.28)	male = 23, female = 112, other = 0	--	--	--
Non-Muslims / Muslims	United States	--	--	--	106	34.15 (13.41)	male = 39, female = 67, other = 0
	Total	***2,937*** [19 samples]	28.31 (11.23)	male = 983, female = 1942, other = 13	***689*** [6 samples]	29.20 (11.09)	male = 284, female = 402, other = 1, na = 2

Table S21
Overview of Included Samples - Sexual and Gender Identity Contexts

	Cis-Heterosexuals			LGBTIQ+ Individuals		
Country	***N***	**Mean Age (*SD*)**	**Gender**	***N***	**Mean Age (*SD*)**	**Gender**
Austria	--	--	--	110	35.38 (11.66)	male = 36, female =65, intersex = 1, other = 8
Belgium	180	19.89 (7.18)	male = 4, female = 176	157	38.76 (17.55)	male = 87, female = 60, intersex = 0, other =10
Brazil	121	35.77 (12.25)	male = 48, female = 73	103	30.14 (9.38)	male = 45, female = 56, intersex = 0, other = 2
Canada	369	22.36 (6.06)	male = 79, female = 290	227	26.41 (10.21)	male = 56, female = 127, intersex = 1, other = 43
Chile	298	25.19 (9.90)	male = 90, female = 208	236	23.66 (7.33)	male = 107, female = 121, intersex = 1, other = 7
Croatia	168	27.54 (8.70)	male = 26, female = 142	107	26.83 (8.61)	male = 47, female = 56, intersex = 1, other = 3
Czech Republic	105	27.42 (11.12)	male = 40, female = 65	125	23.12 (6.40)	male = 28, female = 96, intersex = 0, other = 1
France	--	--	--	122	34.00 (15.80)	male = 59, female = 29, intersex = 0, other = 34
Germany	641	40.45 (15.54)	male = 408, female = 233	442	34.75 (13.10)	male = 140, female = 239, intersex = 4, other = 59
Hungary	229	22.56 (5.34)	male = 44, female = 185	171	30.18 (11.86)	male = 73, female = 85, intersex = 0, other = 13
Italy	167	29.09 (9.77)	male = 33, female = 134	199	28.84 (10.35)	male = 57, female = 122, intersex = 4, other = 16

Kosovo	81	22.20 (4.69)	male = 5, female = 76			
Mexico	98	23.71 (7.44)	male = 16, female = 82	--	--	--
Netherlands	274	20.72 (5.58)	male = 48, female = 226	160	38.69 (18.97)	male = 69, female = 81, intersex = 3, other = 7
Poland	184	39.69 (11.24)	male = 67, female = 117	176	27.69 (7.66)	male = 52, female = 110, intersex = 1, other = 13
Russia	166	31.72 (11.88)	male = 28, female = 138	123	28.00 (8.57)	male = 50, female = 65, intersex = 4, other = 4
Spain	408	23.59 (5.68)	male = 105, female = 303	318	24.72 (7.73)	male = 121, female = 187, intersex = 2, other = 8
Switzerland	320	30.56 (12.90)	male = 90, female = 230	323	33.12 (12.73)	male = 87, female = 195, intersex = 4, other = 37
Turkey	96[3]	28.89 (8.02)	male = 32, female = 64	--	--	--
United Kingdom	113	29.82 (12.53)	male = 32, female = 81	125	34.37 (14.29)	male = 46, female = 67, intersex = 0, other = 12
United States	185	34.68 (12.28)	male = 94, female = 91	158	28.00 (11.63)	male = 61, female = 78, intersex = 0, other = 19
Total	***4,203*** [19 samples]	28.90 (12.47)	male = 1289, female = 2914	***3,382*** [18 samples]	30.35 (12.65)	male = 1221, female = 1839, intersex = 26, other = 296

Table S22
Sample Composition (LGBTIQ+ Individuals)

Sexual Orientation/ Gender	Male	Female	Intersex	Other	*N*
Heterosexual	21 (21)	16 (16)	2 (0)	23 (13)	62 (50)
Bisexual	193 (28)	754 (25)	11 (4)	74 (62)	1032 (119)
Homosexual	940 (22)	812 (28)	9 (4)	49 (35)	1810 (89)
Asexual	27 (7)	98 (5)	3 (1)	42 (36)	170 (49)
Other	40 (17)	159 (15)	1 (0)	108 (97)	308 (129)
N	1,221 (95)	1,839 (89)	26 (9)	296 (243)	3,382 (436)

Note: In brackets: Individuals identifying as trans*.

Measures

We used parallel survey items for each of the four populations. The in- and outgroup were adapted to the specific in- and outgroups in each context. All questionnaires contained additional measures not reported in the main article and this supplementary material (the full questionnaires can be found here: https://osf.io/uv7aq/). The constructs of interest were intergroup contact, support for social change, needs satisfaction, and perceived illegitimacy. We also included two attention check items. Participants who selected a wrong answer at least once were classified as having failed the attention check. Please refer to Table S4 for a detailed overview of the final set of scales and items.

The top half of Figure S23 depicts the data preparation process, which includes the construction of the final scales. Consistent with the preregistration, the final number of items and measures per construct depended on the results of the CFA. More detailed information on the CFA and the construction of the final scales can be found below (see section *Confirmatory Factor Analysis and Final Scale Construction*).

The final set of measures includes the same five support for social change scales and the same two perceived illegitimacy scales for all four populations. The number of intergroup contact scales for LGBTIQ+ individuals (four) differs from those of the other groups (five) because we did not include quantity of contact for LGBTIQ+ individuals (LGBTIQ+ individuals have constant contact with cis-heterosexuals).

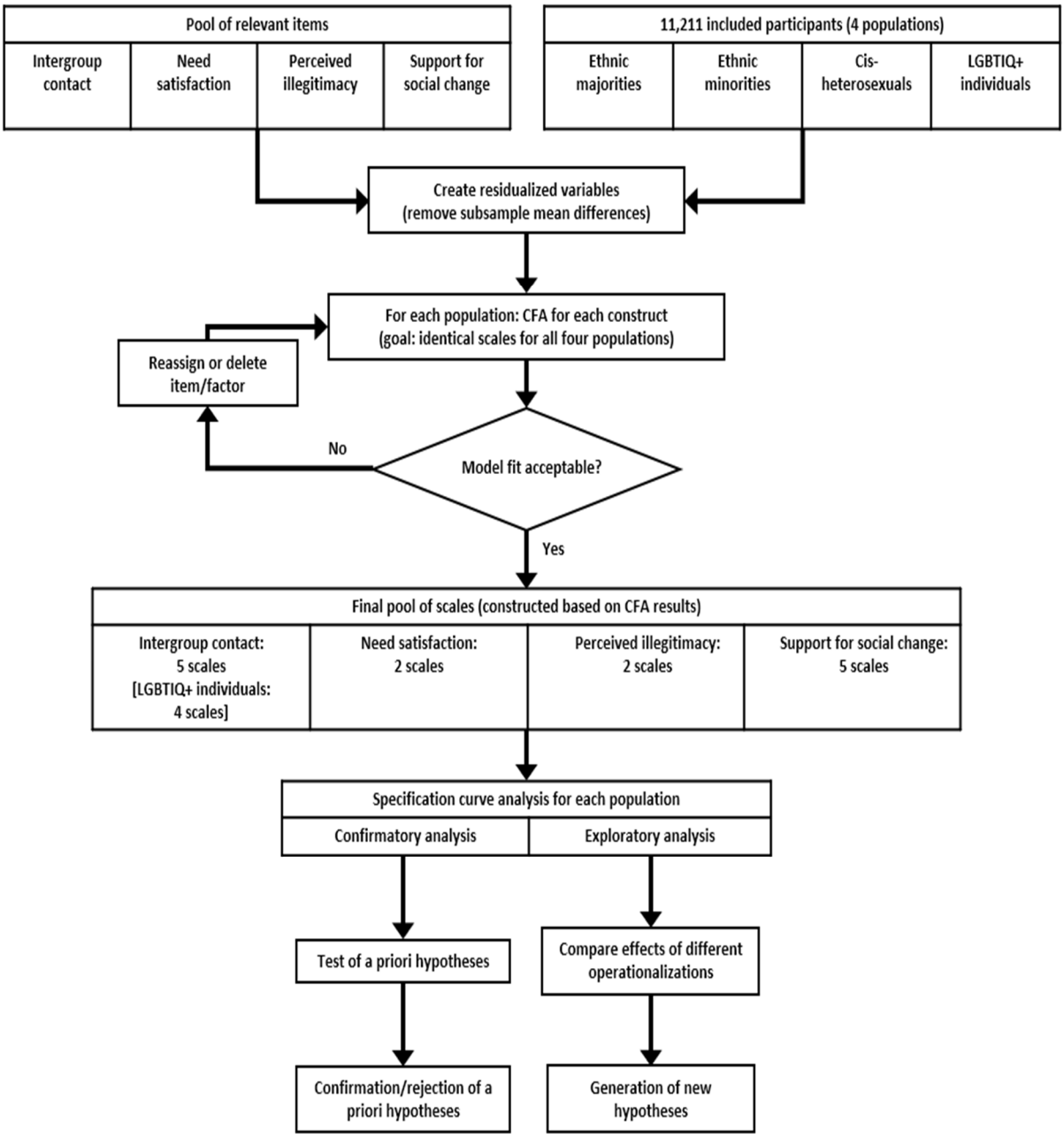


Figure S23. Data preparation, scale construction, and analytic procedure.

Other than that, intergroup contact measures are the same across the four populations. Regarding need satisfaction, all needs scales were assessed among all populations. Following the needs-based model, however, the group-specific needs differ between advantaged and group specific groups: For ethnic minorities and LGBTIQ+ individuals, need for empowerment is group specific, for ethnic majorities and cis-heterosexuals, need for acceptance. Both needs were assessed using two scales each, once as individual level needs and once as group level needs. So, for each population we included two measures for the group-specific need (and two measures for the non-group-specific need for further exploratory analyses).

We also included two attention check items. Participants who selected a wrong answer at least once were classified as having failed the attention check. 11.8% of the participants failed the attention check (i.e., did not answer correctly at least one of two attention check items). Please refer to Table S4 for a detailed overview of the final set of measures, to Table S24 for descriptive statistics among disadvantaged groups, and to Table S25 for descriptive statistics among advantaged groups.

Table S23
Overview of Final Measures (Scales and Items)

Constructs & Measures	Items	Source/Comment
Intergroup contact		
1) Quantity of contact	1†) How often do you interact with [participants' outgroup]? (1 = *Never,* 2 = *Less than once a year*, 3 = *Yearly*, 4 = *A few times a year*, 5 = *Monthly*, 6 = *Weekly*, 7 = *Daily*) 2†) How many [participants' outgroup] people do you know, at least as acquaintances? (0 = *None*, 10 = *10 or more*)	Adapted from Voci & Hewstone (2003)
2) Positive contact	When you interact with [participants' outgroup], to what extent do you experience the following: 1) The contact is friendly? 2) You cooperate well with each other? 3) You interact as equals? (1 = *Strongly disagree* to 7 = *Strongly agree*)	Adapted from Kelly & Breinlinger (1995) Tropp & Brown (2004)
3) Absence of negative contact (negative contact, recoded)	When you interact with [participants' outgroup], to what extent do you experience the following: 1) The contact was unpleasant? 2) The contact is negative? (1 = *Strongly disagree* to 7 = *Strongly agree*)	Adapted from Barlow et al. (2012)
4) Number of outgroup friends	1) How many of your friends are [participants' outgroup]? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Tropp & Pettigrew (2005)
5) Frequency of meeting outgroup friends	1) How often do you meet your [participants' outgroup] friends? (1 = *Never* to 7 = *Daily*)	Adapted from Tropp & Pettigrew (2005)
Support for social change		
1) Low cost collective action	Would you like to engage in the following activities in the future? 1) Voting for political candidates who support the equal treatment of [disadvantaged group]. 2) Signing an online/regular petition to support action against the unequal treatment of [disadvantaged group]. 3) Sharing posts on Facebook to support [disadvantaged groups] equality. (1 = *Not at all* to 7 = *Very much*)	Adapted from Van Zomeren, Postmes, Spears, & Bettache (2011). CFA: 2 factor solution: low vs. high cost behavior.
2) High cost collective action	Would you like to engage in the following activities in the future? 1) Attending meetings or workshops regarding the unequal treatment of [disadvantaged group]. 2) Writing letters to public officials or other people of influence to protest against the unequal treatment of [disadvantaged group]. 3) Attending demonstrations, protests or rallies against the unequal treatment of [disadvantaged group]. (1 = *Not at all* to 7 = *Very much*)	Adapted from van Zomeren et al. (2011). CFA: 2 factor solution: low vs. high cost behavior.
3) Support for empowering policies	1) [Disadvantaged group] should obtain much more power in the decision-centers of our society.	Shnabel, Dovidio, & Levin (2016)

	2) Institutions of my country should allocate more places to [disadvantaged group] as a form of affirmative action. 3) The State budget should be distributed equally so that the resources that are allocated to [disadvantaged group] are proportional to those that are allocated to [advantaged group]. (1 = *Strongly disagree* to 7 = *Strongly agree*)	
4) Raising ingroup awareness	When I come into contact with ingroup members, we talk about… 1) … injustices in society regarding [disadvantaged group]. 2) … personal experiences with discrimination against [disadvantaged group]. 3) … the existence of [advantaged groups] privilege. (1 = *Not at all* to 7 = *Very often*)	Adapted from Saguy, Dovidio, & Pratto (2008)
5) Working in solidarity	1) How willing are you to cooperate with [participants' outgroup] to work for justice for [disadvantaged group]? 2) How willing are you to unite with [participants' outgroup] to work for justice for [disadvantaged group]? 3) How willing are you to protest alongside [participants' outgroup] to work for justice for [disadvantaged group]? (1 = *Not at all* to 7 = *Very much*)	Based on Glasford & Calcagno's (2012) conceptualization of group-based solidarity
Needs satisfaction (group-specific)		
1) Individual level – empowerment [disadvantaged groups]	1) I felt that [participants' outgroup] with whom I had contact perceived me as competent and intelligent. 2) I felt that [participants' outgroup] with whom I had contact listened to what I had to say.	Adapted from SimanTov-Nachlieli & Shnabel (2014)
1) Individual level – acceptance [advantaged groups]	1) I felt welcomed and accepted by outgroup-member with whom I had contact. 2) I felt that outgroup-member with whom I had contact saw me as prejudiced or immoral. [R]	Adapted from SimanTov-Nachlieli & Shnabel (2014)
2) Collective level – empowerment [disadvantaged groups]	1) I felt that [participants' outgroup] with whom I had contact perceived [participants' ingroup] as competent and intelligent. 2) I felt that [participants' outgroup] with whom I had contact listened to what [participants' ingroup] had to say.	Adapted from SimanTov-Nachlieli & Shnabel (2014)
2) Collective level – acceptance [advantaged groups]	1) Contact with [participant's outgroup] left me with the impression that [participant's ingroup] is welcomed and accepted by [participants' outgroup]. 2) Contact with [participants' outgroup] left me with the impression that [participants' outgroup] see [participants' ingroup] as prejudiced or immoral. [R]	Adapted from SimanTov-Nachlieli & Shnabel (2014)

Perceived illegitimacy		
1) System justification (recoded)	1) In general, relations between [advantaged group] and [disadvantaged group] are fair. 2) Most policies relating to [the disadvantaged group] serve the greater good. 3) Everyone [advantaged group and disadvantaged group] has a fair shot at wealth and happiness. 4) The [respective country] society is set up so that [advantaged group] and [disadvantaged group] usually get what they deserve. 5) The political decisions dealing with [disadvantaged group] are as they should be. 6) For [disadvantaged group], [respective country] is the best country in the world to live in.	Adapted from system justification scale (Jost & Kay, 2005). Scale was recoded in order to measure perceived illegitimacy (i.e., higher scores reflect *less* system justification)
2) Legitimacy of group differences (recoded)	1) I think it is justified that [advantaged group] have a higher status than [disadvantaged group]. 2) I think the advantages of [advantaged group] compared to [disadvantaged group] are legitimate.	Adapted from Weber, Mummendey, & Waldzus (2002). Scale was recoded in order to measure perceived illegitimacy (i.e., higher scores reflect perceived illegitimacy of group differences)
Attention Check		
	1) When you have read this item, please select the second point on the scale (to the right of 'Strongly disagree') 2) When you have read this item, please select the sixth point on the scale (to the left of 'Strongly agree').	

Note. †Quantity of contact and quantity of indirect outgroup friends were not included among LGBTIQ+ individuals. This final set of items for each construct was determined by the CFAs. Unless indicated otherwise, the final scales and items were identical across the four populations and were assessed on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Participants' outgroups and ingroups were adapted to the specific context.

Table S24
Descriptive Statistics – Disadvantaged Groups

Construct	Scale	Ethnic Minorities				LGBTIQ+ Individuals			
		Items	*M*	*SD*	*Alpha*	Items	*M*	*SD*	*Alpha*
Intergroup contact	Quantity of contact	2	6.15	1.32	.67	-	-	-	-
	Positive contact	3	5.48	1.35	.86	3	5.77	1.14	.83
	Absence of negative contact	2	5.75	1.35	.78	2	5.81	1.22	.80
	Number of outgroup friends	1	3.48	1.86	-	1	4.79	1.44	-
	Frequency of meeting outgroup friends	1	4.57	1.75	-	1	5.90	1.14	-
Support for social change	Low cost collective action	3	4.43	1.99	.83	3	5.64	1.48	.67
	High cost collective action	3	3.78	2.02	.91	3	4.54	1.74	.81
	Support for empowering policies	3	5.13	1.38	.68	3	5.41	1.29	.65
	Raising ingroup awareness	3	3.85	1.85	.92	3	4.45	1.65	.89
	Working in solidarity	3	5.59	1.49	.90	3	6.25	1.12	.86
Group-specific need satisfaction	Individual level - acceptance	2	5.47	1.26	.44	2	5.48	1.26	.62
	Individual level - empowerment	2	5.46	1.30	.82	2	5.80	1.14	.83
	Correlation – acceptance and empowerment need			*r* = .65				*r* = .62	
	Collective level - acceptance	2	4.79	1.43	.55	2	4.75	1.35	.68
	Collective level – empowerment	2	4.90	1.42	.80	2	4.93	1.33	.79
	Correlation – acceptance and empowerment need			*r* = .67				*r* = .68	
Perceived illegitimacy	System justification (recoded)	6	4.40	1.51	.86	6	4.64	1.31	.79
	Legitimacy of group differences (recoded)	2	5.49	1.75	.82	2	6.52	1.13	.63

Table S25
Descriptive Statistics – Advantaged Groups

Construct	Scale	Ethnic Majorities				Cis-Heterosexuals			
		Items	*M*	*SD*	*Alpha*	Items	*M*	*SD*	*Alpha*
Intergroup contact	Quantity of contact	2	4.30	1.71	.65	2	4.59	1.55	.72
	Positive contact	3	5.24	1.42	.86	3	6.08	1.04	.81
	Absence of negative contact	2	5.88	1.41	.86	2	6.38	1.07	.79
	Number of outgroup friends	1	1.73	1.01	-	1	1.97	0.89	-
	Frequency of meeting outgroup friends	1	4.66	1.57	-	1	4.15	1.91	-
Support for social change	Low cost collective action	3	3.76	2.01	.85	3	4.39	1.98	.82
	High cost collective action	3	2.72	1.71	.89	3	3.02	1.77	.87
	Support for empowering policies	3	4.21	1.52	.75	3	4.69	1.46	.75
	Raising ingroup awareness	3	2.59	1.47	.85	3	2.66	1.45	.86
	Working in solidarity	3	4.51	1.72	.91	3	4.88	1.70	.90
Need satisfaction	Individual level - acceptance	2	5.64	1.30	.60	2	6.19	1.07	.57
	Individual level - empowerment	2	5.15	1.40	.82	2	5.85	1.13	.78
	Correlation – acceptance and empowerment need			r = .70				r = .60	
	Collective level - acceptance	2	4.94	1.41	.64	2	5.57	1.25	.52
	Collective level – empowerment	2	4.69	1.36	.76	2	5.49	1.19	.73
	Correlation – acceptance and empowerment need			r = .66				r = .55	
Perceived illegitimacy	System justification (recoded)	6	4.51	1.13	.74	6	4.25	1.23	.77
	Legitimacy of group differences (recoded)	2	5.61	1.65	.85	2	6.08	1.44	.74

Analytic Procedure

The analytic procedure is depicted in Figure S23 (see above). We first created residualized items by removing the sample means, then selected the final set of items and scales using CFA, and finally applied specification curve analyses for the main results reported in the paper.

Item-Level Residualization

We included heterogenous convenience samples from diverse countries. Hence, we expected variance between samples. We regressed the original items on the subsample identifier variable and used the residualized items in the CFA and main analyses to separate out this between-sample variance. Thus, we tested the hypotheses at the level of individuals instead of subsamples. Using this procedure instead of conducting multilevel analysis enabled us to publish the data underlying the reported the analyses while keeping the raw data confidential. Please be careful not to confuse this item-level residualization with the scale-level needs residualization (see below).

Confirmatory Factor Analysis and Final Scale Construction

We ran CFAs, separately for the four populations and separately for all the intergroup contact items (one set of analyses), all need satisfaction items (one set of analyses), all perceived illegitimacy items (one set of analyses), and for all the support for social change items (one set of analyses).

Starting Models.

For *need satisfaction*, *perceived illegitimacy*, and *support for social change*, we started with the measurement models postulated in the preregistration. For *intergroup contact,* we deviated from the preregistration: Based on theoretical considerations, we used the following scales as a starting point of the CFA: *quantity of contact* (not included for LGBTIQ+ individuals), *positive contact*, *negative contact*, *number of outgroup friends*, and *frequency of*

meeting outgroup friends. The final scale name *absence of negative contact* results from recoding items which originally measured *negative contact*. Based on our a priori hypotheses, (positive) *intergroup contact* was expected to correlate positively with *support for social change* among advantaged groups and negatively among disadvantaged groups. The reverse coded versions of the *negative contact* measures allowed us to derive reasonable and accurate conclusions from the results of our specification curve analysis. Next, we checked for both constructs whether the items would form unidimensional scales as expected separately for each of the four populations.

Refined Models.

As described in Figure S23, we adapted the measurement models if the model fit did not meet the following criteria of acceptable model fit suggested by Hu and Bentler (1999): CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. As postulated a priori, we aimed to use as many items as possible without reducing model fit below these cutoff points. We further aimed to be consistent among the four populations (i.e., to include the same items and scales among all four populations) and with our previous paper (Hässler et al., 2019). When the planned set of items and scales failed to produce a satisfactory model fit, we deleted or rearranged items or scales until model fit for the specific construct within each population was satisfactory. Importantly, these analyses were carried out separately for each construct and population so that we would not be aware of the relation between constructs when deciding on the items to be used for the main analyses. All steps of the CFAs can be reproduced with the file Scale_Construction_CFA.R, which can be found here: https://osf.io/2wv67/?view_only=c7f41ca73d474983b23456f5d26d6986

The CFAs of the refined models suggested acceptable model fit for the final measurement models with the following exceptions: For *intergroup contact,* robust RMSEA was above the cutoff for ethnic majorities (0.067) and cis-heterosexuals (0.087). For

perceived illegitimacy, robust RMSEA was above the cutoff for ethnic minorities (0.062). To keep the scales consistent between the populations, we decided to go along with these values. See Table S4 for a detailed overview of the final set of scales and items.

Scale-Level Needs Residualization.

We observed strong correlations between the measures of satisfaction of acceptance and empowerment needs in all populations (see Table S24 for disadvantaged groups and Table S25 for advantaged groups). Therefore, in the interest of more accurate tests of the hypotheses, we decided to deviate from the preregistration by using residualized versions of the need satisfaction scale variables (scale-level needs residualization; in each case controlling for the other need).

Specification Curve Analysis

In order to estimate the postulated direct (Hypothesis 1-2) and interaction effects (Hypothesis 3-5) conditional on methodological choices, we conducted specification curve analyses following Simonsohn and colleagues' procedure (Simonsohn, Simmons, & Nelson, 2015). All steps of the specification curve analysis can be reproduced with the Master_Spec.R (lines 1-239) and the underlying Functions_Spec.R script. The files and the aggregated dataset underlying the specification curve analysis as well as the corresponding codebook can be found online (https://osf.io/2wv67/?view_only=c7f41ca73d474983b23456f5d26d6986).

Specification curve analysis allows for both confirmatory and exploratory research. Although both types of research are equally valuable (e.g., Nosek, Ebersole, DeHaven, & Mellor, 2017; Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2011), it is important to clearly demarcate confirmatory research (here: testing our a priori hypotheses regarding the asymmetrical contact effect) from exploratory research (here: exploring the influence of choices regarding operationalizations and analytic decisions). Figure S3 shows

Step 1: Estimating the bivariate correlations

1a: Identifying/defining the set of reasonable specifications

5 [4] (measures of intergroup contact) x 5 (measures of support for social change) x 2 (need satisfaction) x 2 (perceived illegitimacy) x 2 (attention check failures included/excluded) x 2 (outliers included/excluded) = 400 [320] model specifications

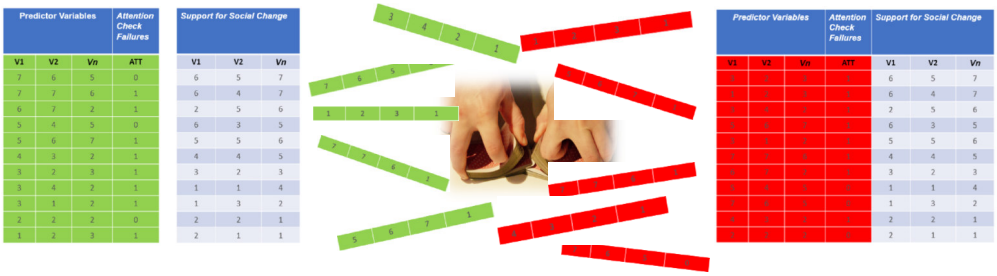
1b: Estimating the results for all model specifications

How many of the 400 [320] model specifications produce statistically significant results?
E.g., 148 of the 400 model specifications show a significant correlation in the predicted direction.

Step 2: Confirmatory analysis

2a: Creation of 1,000 shuffled datasets

How many significant model specifications do we find by chance in each of the 1,000 shuffled datasets?
E.g., shuffled dataset 1: 78 out of 400, shuffled dataset 2: 87 out of 400, …



Note: Colored in green: All predictor variables before shuffling. Colored in red: Randomly reordered values of the predictor variables.

2b: Joint significance test

Divide the number of shuffled datasets with at least as many significant model specifications as in the original dataset by the number of shuffled datasets, e.g.:

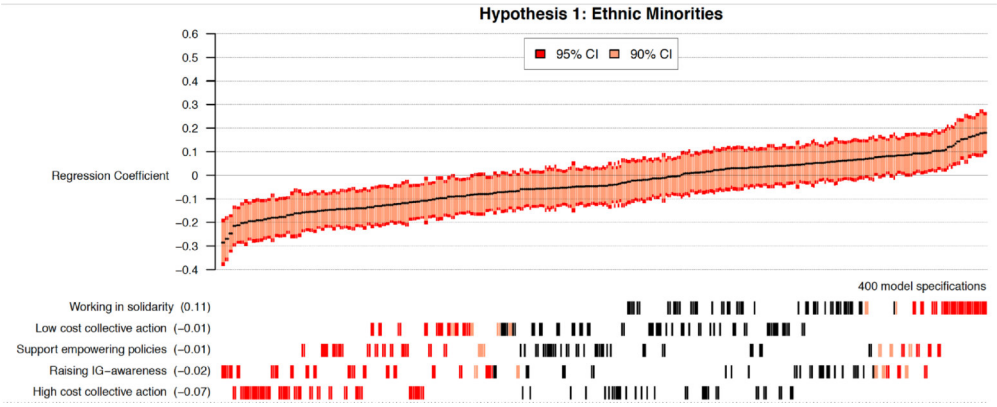
I. 200 of 1,000 shuffled datasets have at least 148 significant effects.
This leads to a *p*-value for the joint test of $p = .20$.

II. Zero of 1,000 shuffled datasets have at least 148 significant effects.
This leads to a *p*-value for the joint test of $p < .001$.

Step 3: Exploratory analysis

3a: Visual inspection of the specification curve

E.g., where do effects of *high cost collective action* cluster?



3b: Meta-regression

To guide, substantiate, and complement the visual inspection.

Figure S24. Overview of the confirmatory part of the specification curve analysis.

our implementation of specification curve analysis, which can be subdivided into (1) estimating the effect size for each postulated coefficient, (2) confirmatory analysis, and (3) exploratory analysis.

Step 1: Estimating effect size for each postulated coefficient.

Specification curve analysis entails reporting the results of all reasonable model specifications instead of focusing on a small subset thereof (Simonsohn et al., 2015). To do so, one needs to first identify and define relevant specification factors. Besides testing the influence of using particular measures of *intergroup contact, support for social change, group-specific need satisfaction,* and *perceived illegitimacy*, we also tested the impact of two analytic decisions: the inclusion or exclusion of attention check failures as well as outliers. Thus, we identified six specification factors: the operationalization of 1) *intergroup contact*, 2) *support for social change*, 3) *group-specific need satisfaction,* 5) *perceived illegitimacy,* and the in- or exclusion of 5) *attention check failures*, and 6) *outliers*. After determining the specification factors, the set of possible choices for each specification factor has to be defined. Please refer to Table 2 for an overview of our six specification factors.

For example, the first out of the 400 [320 among LGBTIQ+ individuals] specifications consists of the first scales for every construct. Thus, for Hypothesis 1 it consists of *low cost collective action* as dependent variable and *quantity* of intergroup contact as predictor variable along with *individual-level satisfaction of the group-specific need* and context-specific *system justification* (see Table 2). Furthermore, in this particular specification the model *excluded* participants failing the attention check and *excluded* outliers. All in all, 400 [320 among LGBTIQ+ individuals] specifications per hypothesis were examined for each of the four populations.

After the computer runs through the possible specifications of the model, it graphs the distribution of the focal result (e.g., the coefficient representing the association between

intergroup contact and support for social change). Figure S24 depicts the confirmatory part of the specification curve analysis. As an example, we depict the specification curve underlying the independent effect of intergroup contact on support for social change among ethnic minorities (see also Figure S25). Out of the 400 specifications 148 have a significant effect in the predicted direction (shown in red). The exploratory part of using specification curves involves a visual examination of the distribution of results along with information about the specifications that were used. As described below with the actual results, this may provide insights as to which specifications yield stronger or weaker results.

Step 2: Confirmatory analysis.

The goal of the confirmatory analysis was to test all five hypotheses using the joint significance test proposed by Simonsohn and colleagues (2015), which can be summarized as follows.

To determine how many model specifications would lead to a significant effect under the null hypothesis (i.e., by chance), we used a procedure called "shuffling" which (a) separates the dependent and predictor variables in the dataset, (b) randomly reorders the values of the predictor variables, and (c) puts the dependent and the predictor variables back together again (see Figure S24). After shuffling, the data still have the same features as before (e.g., skewness, collinearity), but it is guaranteed that there is no linear relationship between the predictor and the dependent variables. We then recalculated each hypotheses and significance tests from Step 1 for all 400 [320] model specifications using this shuffled dataset. We repeated this procedure 1,000 times. For example, in the first shuffled dataset, 78 out of 400 model specifications might produce significant effects in the predicted direction, in the second shuffled dataset, 87 out of 400, and so on. We then counted how many of these analyses using shuffled datasets produced at least as many significant effects as the observed dataset, e.g., at least 148 significant effects. The *p*-value of this joint significance test was

calculated by dividing this number by the total number of shuffled datasets (i.e., 1,000). With 1,000 shuffled datasets, the smallest estimate of the *p*-value is $p < .001$ if none of the 1,000 shuffled datasets produced at least as many significant effects as the observed data set. (i.e., $p < 1/1{,}000$). We rejected the null hypothesis whenever this proportion was less than .05. For example, if 200 of 1,000 shuffled datasets would have led to at least 148 significant effects, the *p*-value would have been $p = 200/1{,}000 = .20$. Thus, we would not have rejected the null hypothesis.

In our four populations, for the direct effect described in Hypothesis 1, none of the 1,000 shuffled datasets produced at least as many significant effects as the original data. This led to a *p*-value of $p < .001$ in all four populations (see Table 3 in the main article). We therefore rejected the null hypothesis that the number of significant effects in the predicted direction observed in our original datasets occurred by chance. While this was not the case for the direct effect described in Hypothesis 2, the *p*-values for all population were still below .05. We therefore again rejected the null hypothesis that the number of significant effects in the predicted direction observed in our original datasets occurred by chance.

Regarding the interaction effect described in Hypothesis 3, we were only able to reject the null hypothesis for LGBTIQ+ individuals. As for the interaction effect in Hypothesis 4, we rejected the null hypothesis for ethnic majorities. The three-way interaction described in Hypothesis 5 led to *p*-values below .05 for all populations except for ethnic minorities.

Step 3: Exploratory analysis.

Step 3a: Visual inspection of the specification curve.

The goal of the exploratory analysis was to understand in more detail how results depend on model specifications. For this purpose, we first displayed the effect sizes from Step 1 (see above) in descriptive specification curves (see Step 3a in Figure S24; Figure S25-

7; Figures 1-4 in the main article). For Hypothesis 1, the top part of a descriptive specification curve shows sorted point estimates of the independent effect of *intergroup contact* on *support for social change* and 90% (95%) confidence intervals in light (dark) red (see Figure S25A-D). The bottom part shows the so-called dashboard: It indicates the combination of measures and analytic decisions (i.e., the model specifications) underlying a specific effect size. Black bars indicate model specifications that produced non-significant effect sizes, light red bars indicate one-tailed significance (since we formulated and preregistered directional hypotheses), dark red bars indicate two-tailed significance. The exploratory analysis involved a visual examination of the descriptive specification curve. For example, when looking at the descriptive specification curve for ethnic minorities (see Figure S25), one might notice that most model specifications which produced the largest negative effects contain either *raising ingroup-awareness* or *high cost collective action* as a measure of *support for social change.*

Step 3b: Meta-Regression.

Since visual inspection is crude, we quantified the influence of the choices regarding measures on the effect sizes using meta-regression. We regressed the 400 [320 among LGBTIQ+ individuals] effect sizes on the six (effect-coded) specification factors (I) Measure of Intergroup Contact, (II) Measure of Support for Social Change, (III) Measure of Group-Specific Need Satisfaction, (IV) Measure of Perceived Illegitimacy, (V) Exclusion of Attention Check Failures, and (VI) Exclusion of Outliers. The underlying regression for each of the four populations is:

$$\textit{Predicted Effect Size} = b_0 + b_1 * \text{Effect Coded Specification Factor I: Intergroup Contact } (b_{0k} + b_{1j} * \text{PV2} + b_{2j} * \text{PV3} + b_{3j} * \text{PV4} + b_{4j} * \text{PV5†}) + b_1 * \text{Effect Coded Specification Factor II: Support for Social Change } (b_{0j} + b_{1k} * \text{DV2} + b_{2k} * \text{DV3} + b_{3k} * \text{DV4} + b_{4k} * \text{DV5}) \; b_3 * \text{Effect Coded Specification Factor III: Group-Specific Need}$$

Satisfaction (b_{0l} + b_{1l}*PV2) + b_4* Effect Coded Specification Factor IV: Perceived Illegitimacy (b_{0m} + b_{1m}*PV2) + b_5* Effect Coded Specification Factor V: Attention Check Failures (b_{0n} + b_{1n}*ACF) + 6_4* Effect Coded Specification Factor VI: Outliers (b_{0o} + b_{1o}*O)

Note: † Not included among LGBTIQ+ individuals. DV = Dependent variable, PV = Predictor variable. We effect coded the variables for each specification factor. We used the first measurement variable as the reference category for Factor I-IV. For the analytical decision we used 'inclusion' of all participants as reference category. The constant within a specification factor represents the grand mean of this respective specification factor. The coefficient of each of the effect variables is equal to the difference between the grand mean and the mean of the variable. To estimate the reference category, all of the coefficients within one specification factor are summed and multiplied by -1.

The coefficients from this regression allow us to quantify the predicted change in effect size resulting from using one particular measure rather than using all measures within a given specification factor and averaging over the effect sizes. Results of these meta-regressions are shown in Figure S28 (and in Figures 1-4 in the main paper) and reported in Table S27A-E. The significance test for these coefficients draws on the distribution of the coefficients resulting from meta-regressions run on 1,000 shuffled datasets. We counted how often a particular coefficient deviated from zero at least as much as in the original dataset. We rejected the null hypothesis that this deviation occurred by chance whenever this proportion was less than .05. This second permutation test allows us to quantify the influence of using a specific measure of intergroup contact, support for social change, group-specific need satisfaction or perceived illegitimacy on the effect sizes. For example, for ethnic minorities (see Figure S25A), *high cost collective action* and *raising ingroup*-awareness produced effects that were more to the left of the specification curve (i.e., that deviated negatively from the negative grand mean of effects and, thus, produced stronger negative effects). In the dashboard of our descriptive specification curves, the measures of *support for social change*, *intergroup contact, group-specific need satisfaction,* and *perceived illegitimacy* are ordered

by the size of the coefficients. Statistically significant deviations (see Table S27A-E) indicated that the different operationalizations affected the size of predicted effects. Some deviations from the grand mean were consistent across all four populations. E.g., when looking at Hypothesis 1 in the ethnic minority context, among measures for support for social change w*orking in solidarity* produced effects that were more to the right of the specification curve (i.e., that deviated positively from the negative grand mean of effects and, thus, produced weaker negative effects or even positive effects). By contrast, *raising ingroup-awareness* produced effects that were more to the left side of the specification curve (i.e., that deviated negatively from the negative grand mean of effects and, thus, produced stronger negative effects). Other measures led to inconsistent patterns between the four populations.

Table S26A
Meta-Regression for Hypothesis 1: Deviations from the Grand Mean

	Ethnic Minorities		LGBTIQ+ Individuals		Ethnic Majorities		Cis-Heterosexuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Low cost collective action	-0.01	.703	0.02	.027	0.00	.557	0.03	<.001
High cost collective action	-0.07	<.001	-0.04	<.001	0.01	.125	0.02	.004
Working in solidarity	0.11	<.001	0.13	<.001	0.06	<.001	0.08	<.001
Support for empowering policies	-0.01	.488	-0.01	.174	-0.01	.468	-0.01	.238
Raising ingroup awareness	-0.02	.355	-0.09	<.001	-0.07	<.001	-0.12	<.001
Intergroup Contact								
Quantity of contact	0.04	.050	-	-	-0.06	<.001	0.02	.014
Positive contact	-0.03	.118	0.00	.712	0.11	<.001	0.03	.001
Absence of negative contact	-0.06	.009	-0.01	.219	0.03	.020	-0.04	<.001
Number of outgroup friends	-0.04	.071	-0.05	<.001	0.01	.423	0.01	.096
Frequency of meeting OG friends	0.09	<.001	0.06	<.001	-0.10	<.001	-0.02	.001
Group-Specific Need Satisfaction								
Individual Level	0.00	.435	0.00	.071	0.00	.029	0.00	.004
Collective Level	0.00	.435	0.00	.071	0.00	.029	0.00	.004
Perceived Illegitimacy								
System Justification (recoded)	0.01	<.001	0.02	<.001	0.03	<.001	0.01	<.001
Legitimacy of Differences (recoded)	-0.01	<.001	-0.02	<.001	-0.03	<.001	-0.01	<.001

Note. *b* = unstandardized regression coefficient, *p* = *p*-value from permutation test, OG = outgroup.

Table 26B

Meta-Regression for Hypothesis 2: Deviations from the Grand Mean

	Ethnic Minorities		LGBTIQ+ Individuals		Ethnic Majorities		Cis-Heterosexuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Low cost collective action	-0.01	.558	0.01	.463	0.02	.071	0.03	<.001
High cost collective action	-0.04	.094	-0.01	.160	-0.01	.436	-0.01	.166
Working in solidarity	0.02	.595	0.03	.008	0.05	<.001	0.03	<.001
Support for empowering policies	0.08	.002	0.01	.480	0.03	.015	0.03	.003
Raising ingroup awareness	-0.05	.110	-0.03	.002	-0.09	<.001	-0.08	<.001
Intergroup Contact								
Quantity of contact	-0.01	.008	-	-	0.04	<.001	0.01	<.001
Positive contact	0.02	.040	0.01	.001	-0.04	<.001	-0.02	<.001
Absence of negative contact	0.00	.396	0.01	<.001	-0.03	<.001	-0.01	<.001
Number of outgroup friends	0.00	.341	0.00	.034	0.03	<.001	0.01	<.001
Frequency of meeting OG friends	0.00	.758	-0.01	<.001	0.00	.978	0.00	.114
Group-Specific Need Satisfaction								
Individual Level	0.01	.613	0.01	.094	0.02	.105	0.02	.009
Collective Level	-0.01	.613	-0.01	.094	-0.02	.105	-0.02	.009
Perceived Illegitimacy								
System Justification (recoded)	0.01	<.001	0.01	<.001	0.02	<.001	0.01	<.001
Legitimacy of Differences (recoded)	-0.01	<.001	-0.01	<.001	-0.02	<.001	-0.01	<.001

Table 26C

Meta-Regression for Hypothesis 3: Deviations from the Grand Mean

	Ethnic Minorities		LGBTIQ+ Individuals		Ethnic Majorities		Cis-Heterosexuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Low cost collective action	0.00	.851	0.00	1.00	0.00	.627	-0.01	.083
High cost collective action	-0.01	.311	0.00	.588	0.00	.916	0.00	.478
Working in solidarity	0.00	.872	-0.01	.052	0.00	.883	0.00	.551
Support for empowering policies	0.01	.506	0.00	.678	0.00	.724	0.00	.854
Raising ingroup awareness	0.01	.693	0.01	.297	0.00	.653	0.01	.226
Intergroup Contact								
Quantity of contact	0.01	.756	-	-	0.02	.072	0.00	.933
Positive contact	0.02	.179	0.00	.535	0.00	.930	0.01	.116
Absence of negative contact	-0.03	.102	0.02	.018	0.00	.664	0.01	.422
Number of outgroup friends	0.00	.787	0.00	.839	-0.02	.022	-0.01	.200
Frequency of meeting OG friends	0.00	.860	-0.01	.118	0.01	.517	-0.01	.202
Group-Specific Need Satisfaction								
Individual Level	0.00	.725	0.00	.747	0.01	.019	0.00	.819
Collective Level	0.00	.725	0.00	.747	-0.01	.019	0.00	.819
Perceived Illegitimacy								
System Justification (recoded)	0.00	.488	0.00	.240	0.00	.572	0.00	.075
Legitimacy of Differences (recoded)	0.00	.488	0.00	.240	0.00	.572	0.00	.075

Table 26D

Meta-Regression for Hypothesis 4: Deviations from the Grand Mean

	Ethnic Minorities		LGBTIQ+ Individuals		Ethnic Majorities		Cis-Heterosexuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Low cost collective action	-0.02	.298	0.01	.447	-0.01	.048	-0.01	.382
High cost collective action	-0.01	.384	0.00	.790	0.01	.363	0.00	.566
Working in solidarity	0.05	.048	0.01	.303	-0.01	.359	0.00	.633
Support for empowering policies	0.03	.232	-0.02	.086	-0.02	.015	-0.01	.043
Raising ingroup awareness	-0.04	.054	0.00	.886	0.03	.001	0.02	.029
Intergroup Contact								
Quantity of contact	0.00	.606	-	-	0.00	.896	0.00	.137
Positive contact	0.01	.277	0.00	.962	0.00	.867	0.01	<.001
Absence of negative contact	0.01	.130	0.00	.122	-0.01	.006	-0.01	.002
Number of outgroup friends	0.00	.533	0.00	.273	0.00	.521	0.00	.008
Frequency of meeting OG friends	-0.01	.106	0.00	.612	0.01	.074	0.00	.396
Group-Specific Need Satisfaction								
Individual Level	0.00	.911	0.01	.262	0.01	.380	0.00	.813
Collective Level	0.00	.911	-0.01	.262	-0.01	.380	0.00	.813
Perceived Illegitimacy								
System Justification (recoded)	0.02	.099	0.00	.602	0.00	.847	0.00	.828
Legitimacy of Differences (recoded)	-0.02	.099	0.00	.602	0.00	.847	0.00	.828

Table 26E

Meta-Regression for Hypothesis 5: Deviations from the Grand Mean

	Ethnic Minorities		LGBTIQ+ Individuals		Ethnic Majorities		Cis-Heterosexuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Low cost collective action	0.01	.248	0.01	.360	0.00	.605	0.00	.399
High cost collective action	-0.01	.172	0.00	.986	0.00	.819	0.00	.657
Working in solidarity	0.00	.799	0.00	.595	0.00	.515	0.00	.522
Support for empowering policies	0.01	.314	0.00	.726	-0.01	.111	0.00	.373
Raising ingroup awareness	-0.01	.577	0.00	.559	0.01	.179	0.01	.050
Intergroup Contact								
Quantity of contact	0.01	.418	-	-	0.02	.001	0.01	.061
Positive contact	0.00	.802	0.00	.443	-0.01	.075	0.00	.753
Absence of negative contact	0.02	.144	0.00	.448	-0.03	<.001	-0.02	<.001
Number of outgroup friends	0.00	.918	0.00	.512	0.02	.020	0.00	.880
Frequency of meeting OG friends	-0.03	.071	0.00	.520	0.00	.907	0.01	.031
Group-Specific Need Satisfaction								
Individual Level	0.01	.025	0.00	.589	0.00	.336	-0.01	.130
Collective Level	-0.01	.025	0.00	.589	0.00	.336	0.01	.130
Perceived Illegitimacy								
System Justification (recoded)	-0.01	.139	0.00	.619	0.00	.998	0.01	.001
Legitimacy of Differences (recoded)	0.01	.139	0.00	.619	0.00	.998	-0.01	.001

Results

The specification curves underlying the independent of group-specific and group-non-specific need satisfaction on support for social change (Hypothesis 2) can be found in the manuscript (Figures 1-4). The independent effects of intergroup contact (Hypothesis 1) and all postulated interactions (Hypothesis 3-5) can be found below (see Figures S4-7).

Comparison with Hässler et al. (2019)

We assumed that the visual examination of the independent effect of intergroup contact on support for social change (Hypothesis 1) would reveal results similar to the previously reported bivariate correlations between intergroup contact and support for social change (Hässler et al., 2019). However, there are two major differences between the regression coefficient underlying this more complex regression model and the previously reported bivariate correlation: (i) here we control for need satisfaction, perceived illegitimacy, and the two- and three-way interactions between intergroup contact, need satisfaction, and perceived illegitimacy and, therefore, (ii) we could not include indirect contact because the interaction terms between need satisfaction and contact can be theoretically derived only for direct contact. Despite these differences, the pattern underlying the bivariate correlations generalized well to the independent effect of intergroup contact on support for social change in the more complex regression model (see Figure S25A-D).

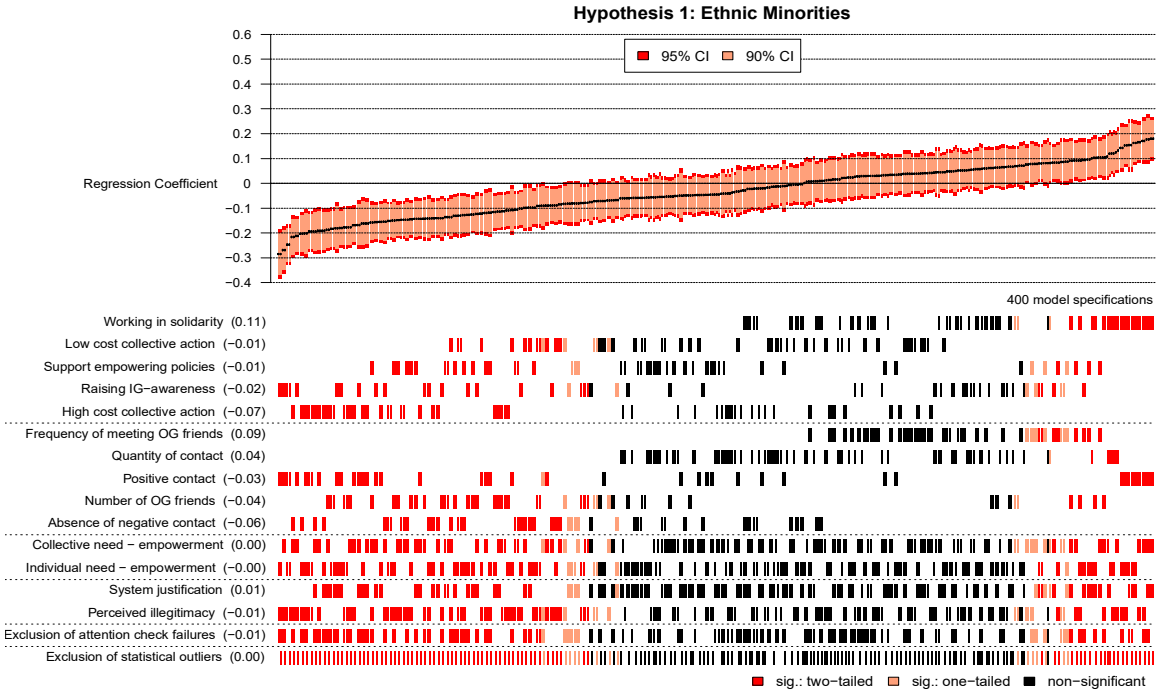


Figure S25A. Results of the specification-curve analysis showing the effect of intergroup contact on support for social change among ethnic minorities (n = 689).

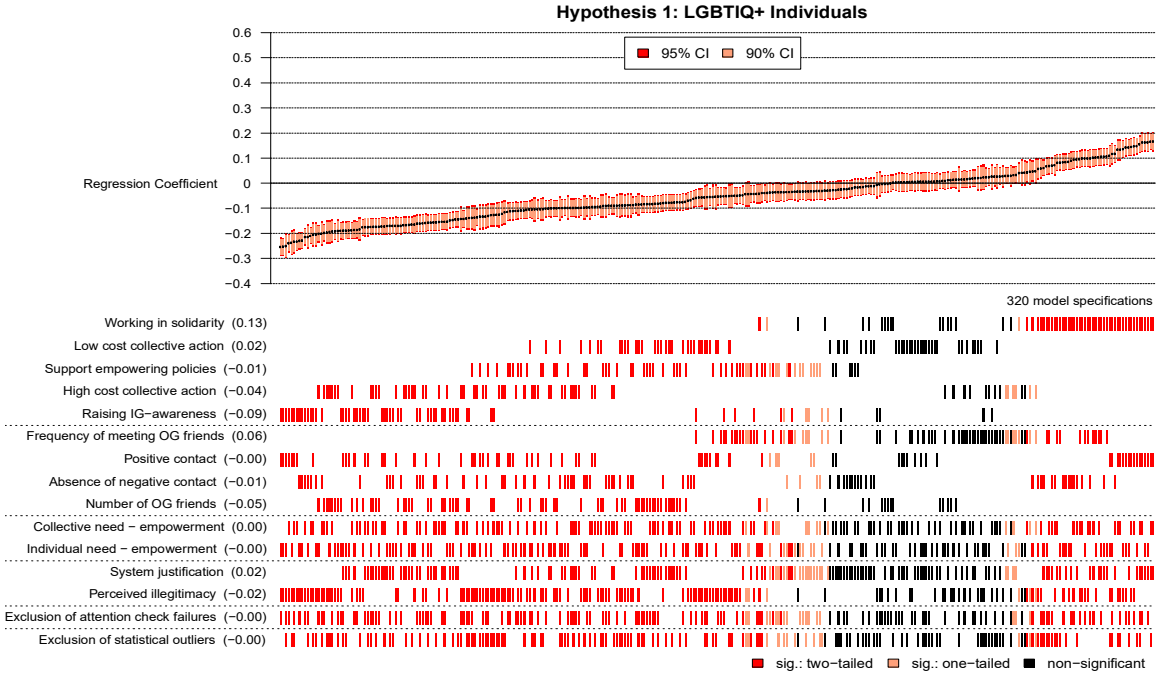


Figure S25B. Results of the specification-curve analysis showing the effect of intergroup contact on support for social change among LGBTIQ+ individuals (n = 3,382). Note: The top part of Figures XA and XB shows sorted effect sizes and 90% (95%) confidence intervals in light (dark) red. The bottom part shows the combinations of measures and analytic decisions underlying each effect size. The numbers in parentheses on the left-hand side indicate the change in size of the effects (relative to the grand mean of effect sizes) resulting from using this particular measure or analytic decision.

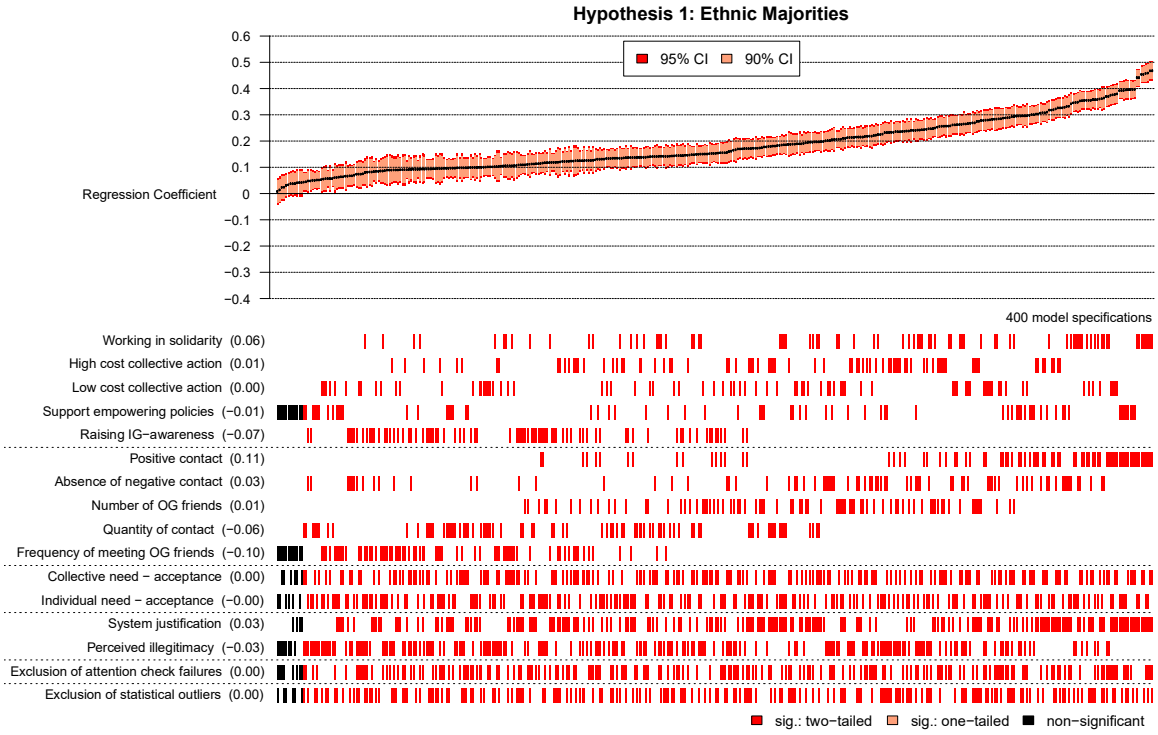


Figure S25C. Results of the specification-curve analysis showing the effect of intergroup contact on support for social change among ethnic majorities (n = 2,937).

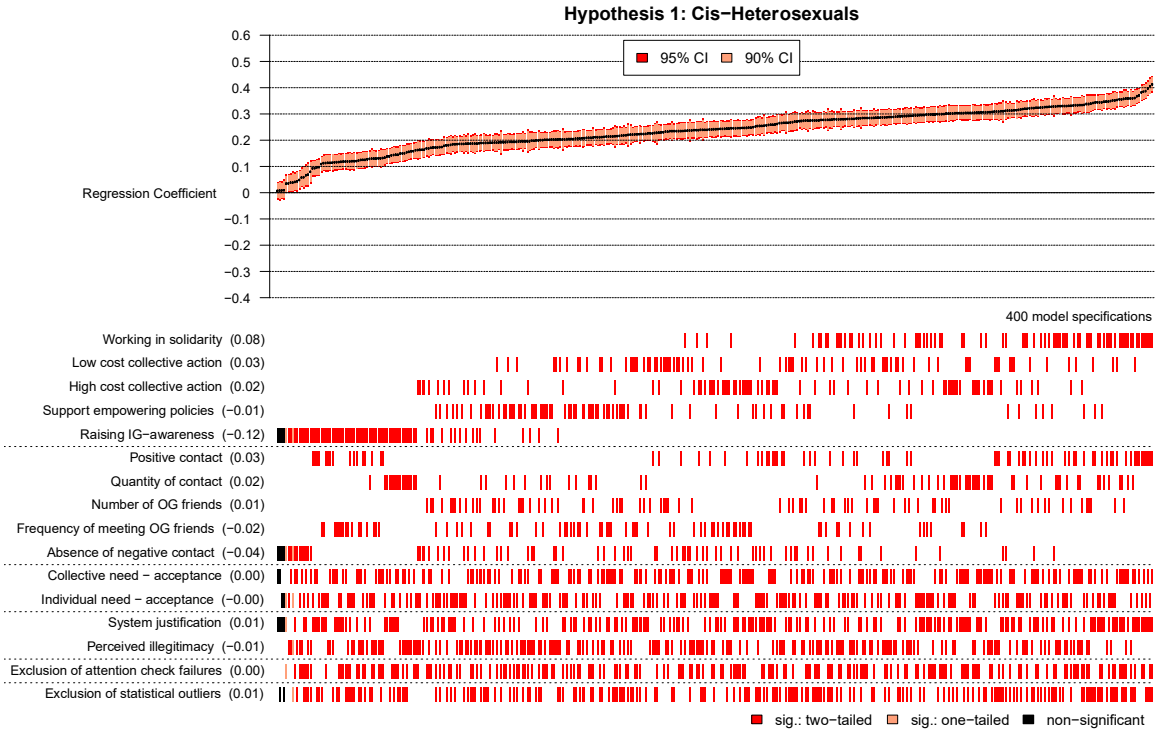


Figure S25D. Results of the specification-curve analysis showing the effect of intergroup contact on support for social change among cis-heterosexuals (*n* = 4,203).

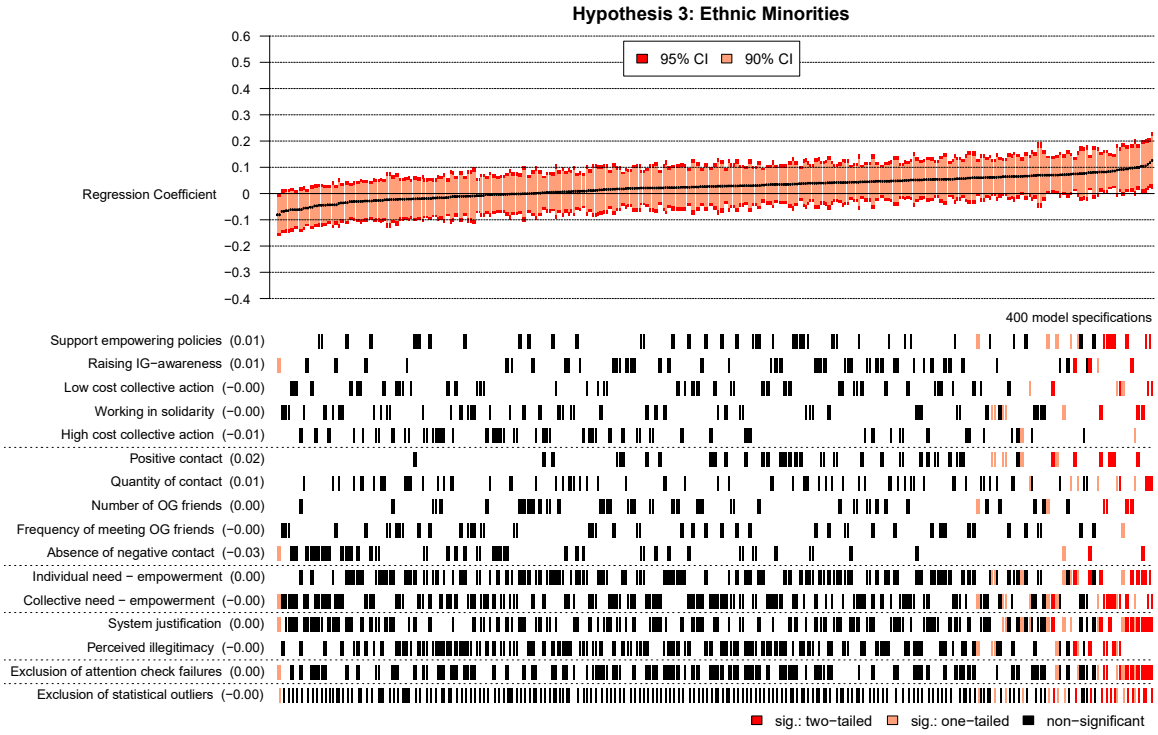


Figure S26A. Results of the specification-curve analysis showing the effect of group specific need satisfaction on the relationship between contact and support for social change among ethnic minorities (n = 689).

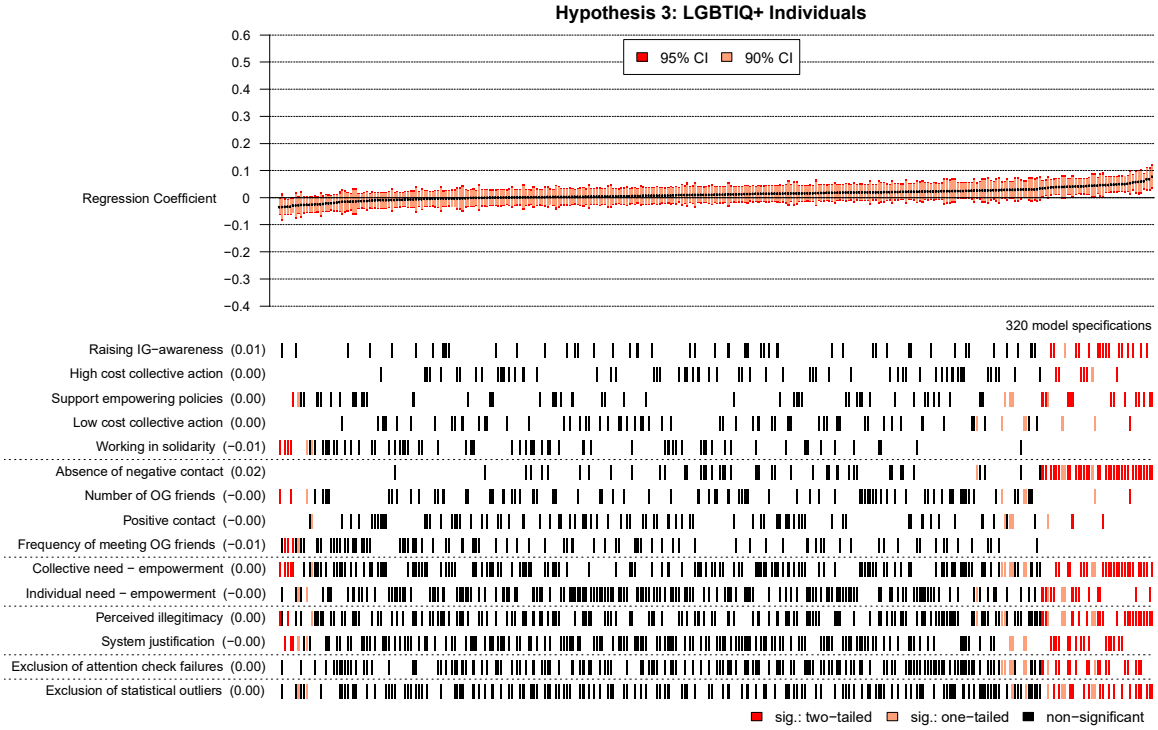


Figure S26B. Results of the specification-curve analysis showing the effect of group specific need satisfaction on the relationship between contact and support for social change among LGBTIQ+ individuals (n = 3,382).

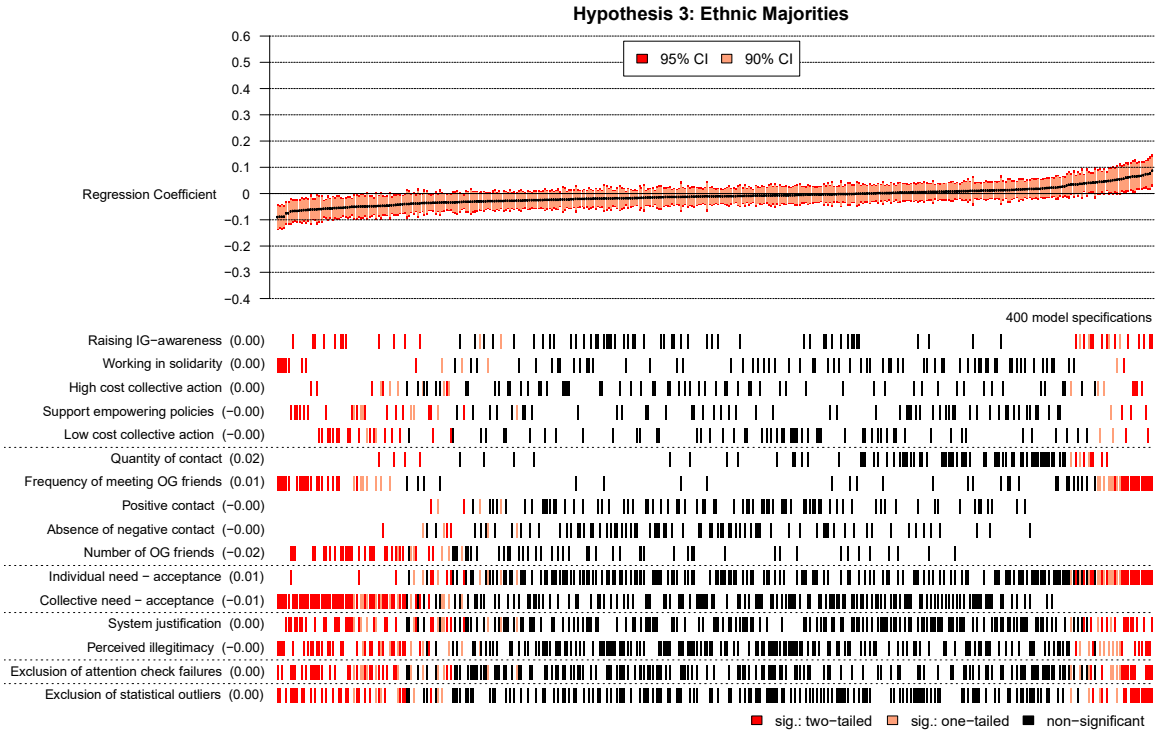


Figure S26C. Results of the specification-curve analysis showing the effect of group specific need satisfaction on the relationship between contact and support for social change among ethnic majorities (n = 2,937).

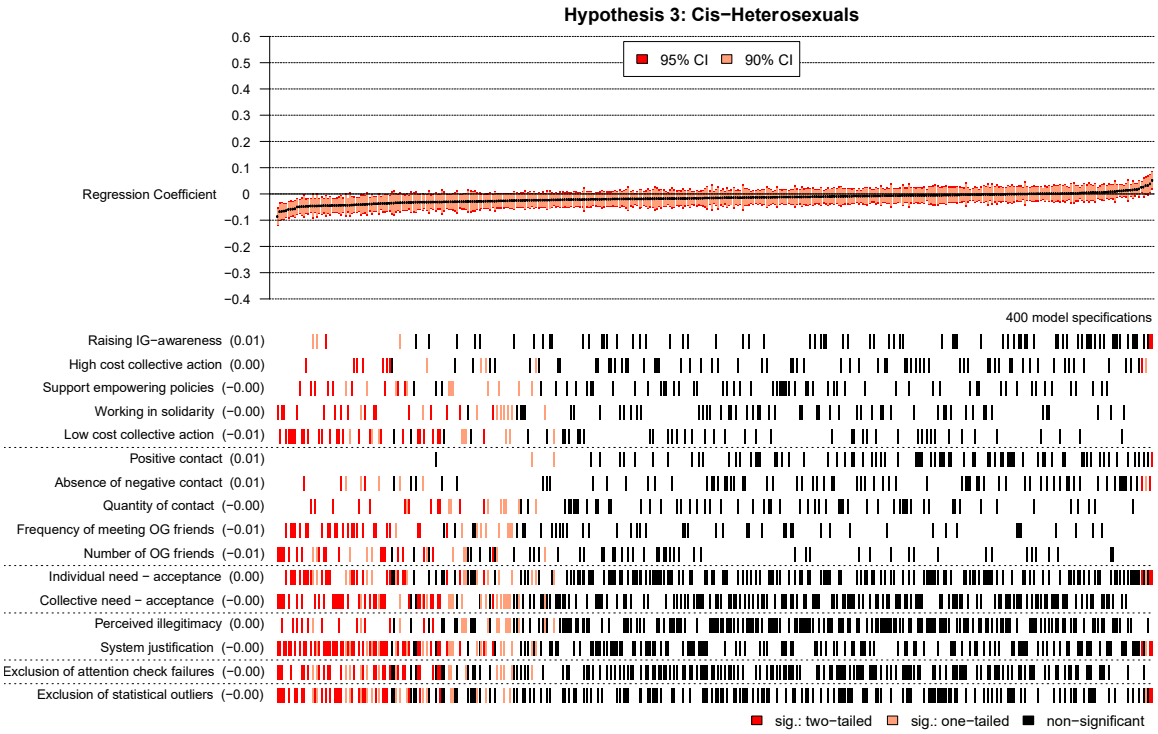


Figure S26D. Results of the specification-curve analysis showing the effect of group specific need satisfaction on the relationship between contact and support for social change among cis-heterosexuals (n = 4,203).

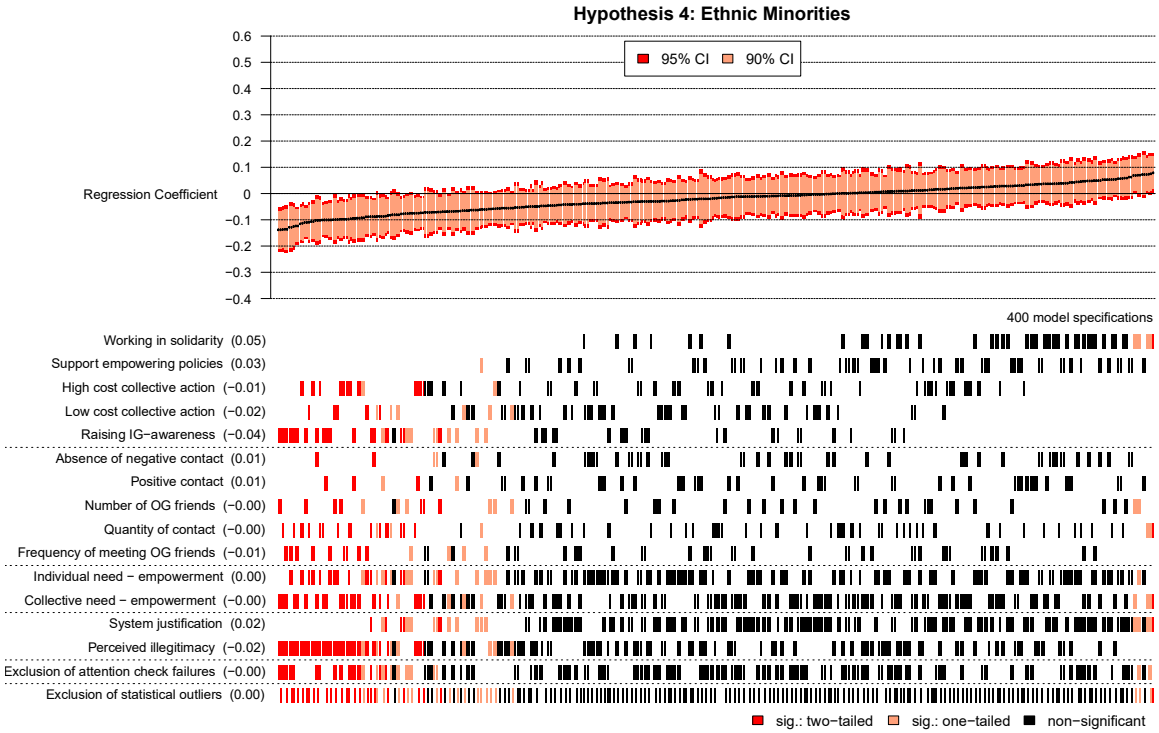


Figure S27A. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the relationship between need satisfaction and support for social change among ethnic minorities (n = 689).

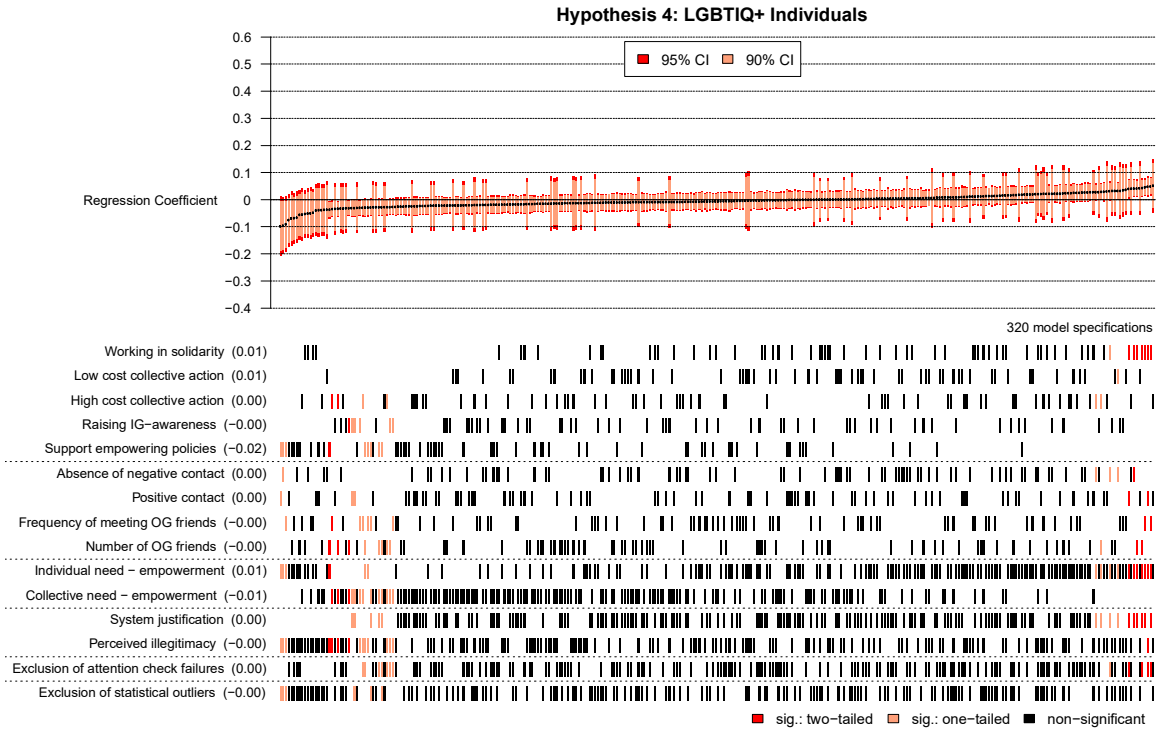


Figure S27B. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the relationship between need satisfaction and support for social change among LGBTIQ+ individuals (n = 3,382).

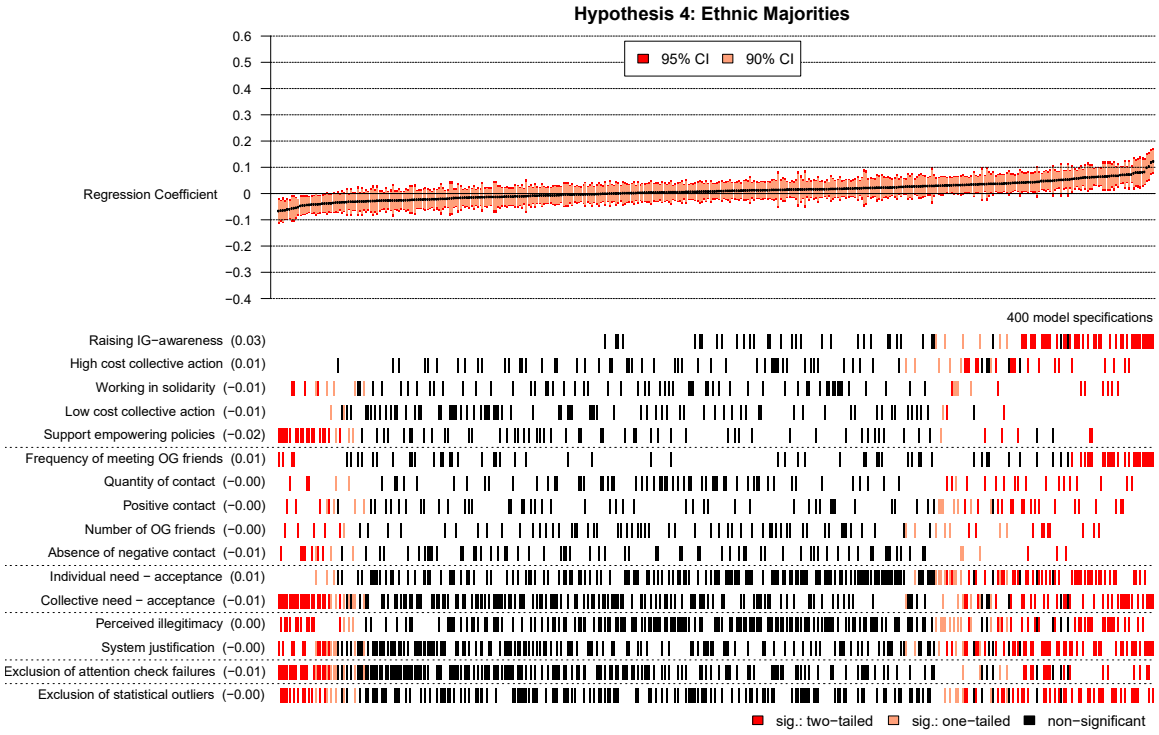


Figure S27C. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the relationship between need satisfaction and support for social change among ethnic majorities (n = 2,937).

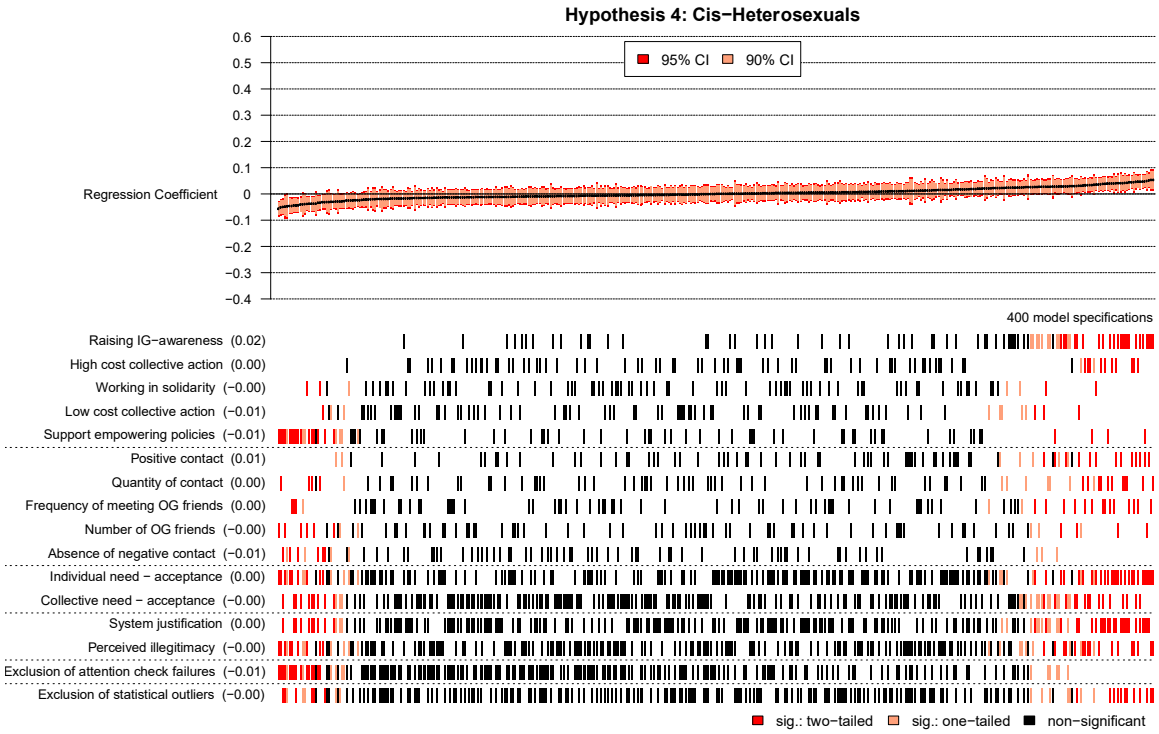


Figure S27D. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the relationship between need satisfaction and support for social change among cis-heterosexuals (n = 4,203).

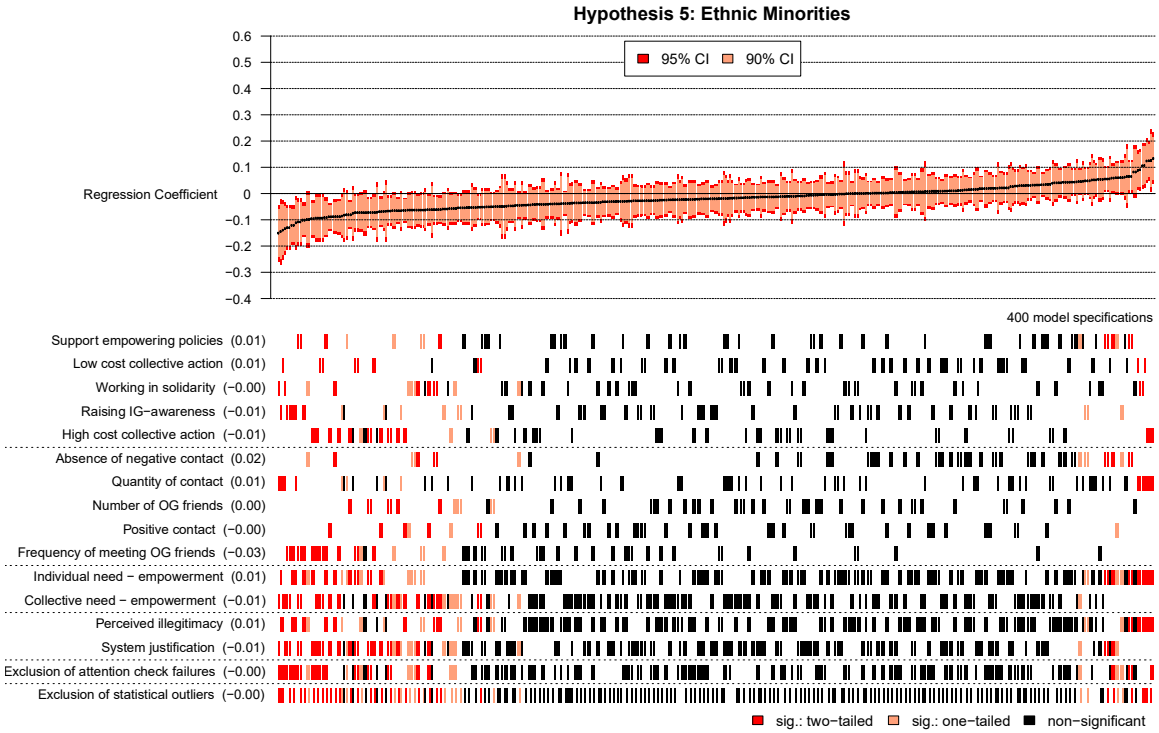


Figure S28A. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the moderating effect of need satisfaction on the relationship between contact and social change among ethnic minorities (n = 689).

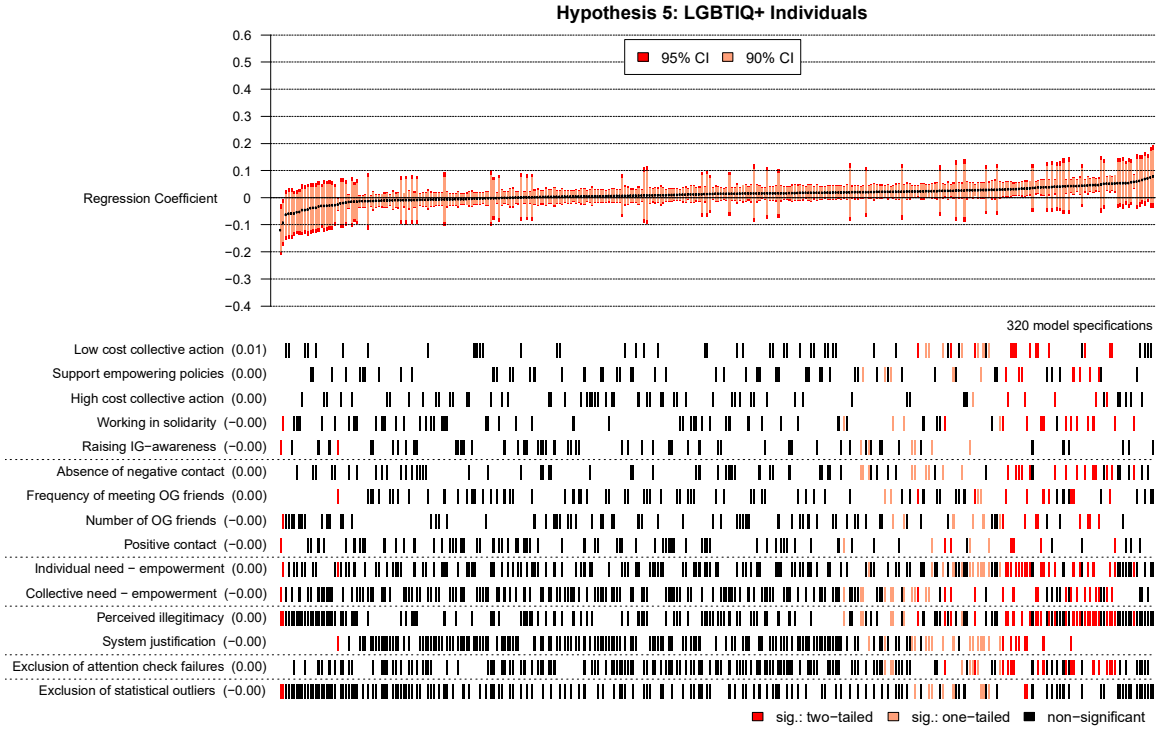


Figure S28B. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the moderating effect of need satisfaction on the relationship between contact and social change among LGBTIQ+ individuals (n = 3,382).

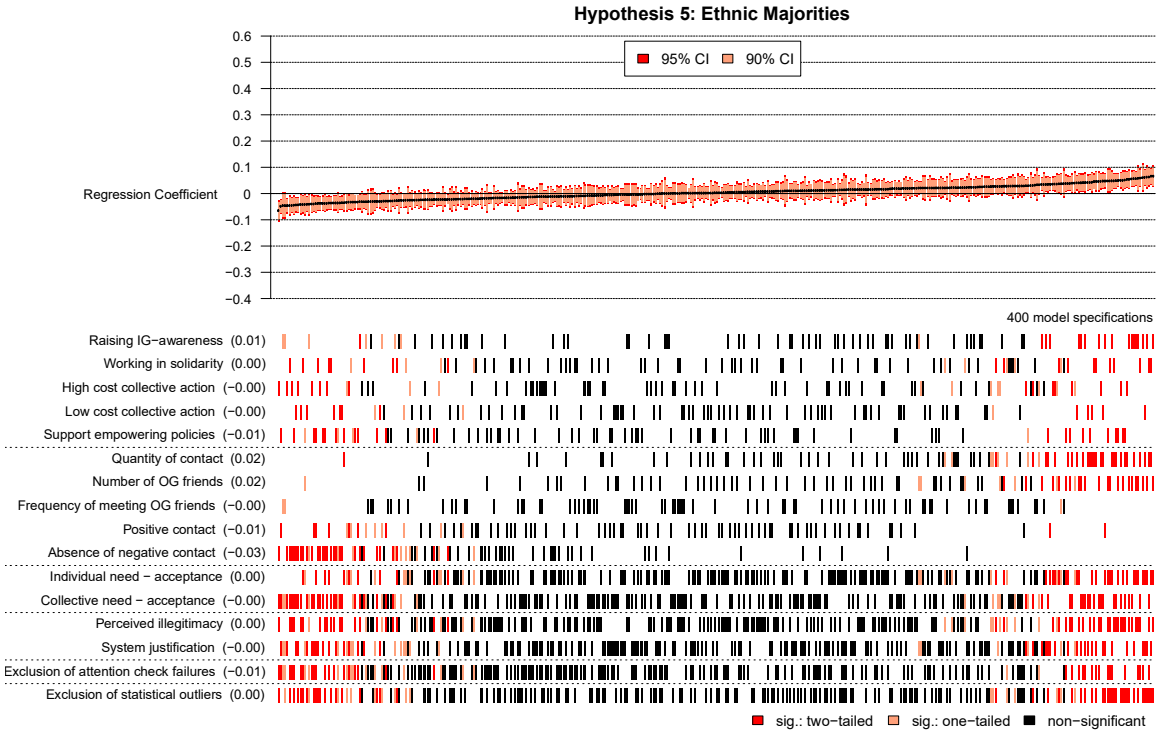


Figure S28C. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the moderating effect of need satisfaction on the relationship between contact and social change among ethnic majorities (n = 2,937).

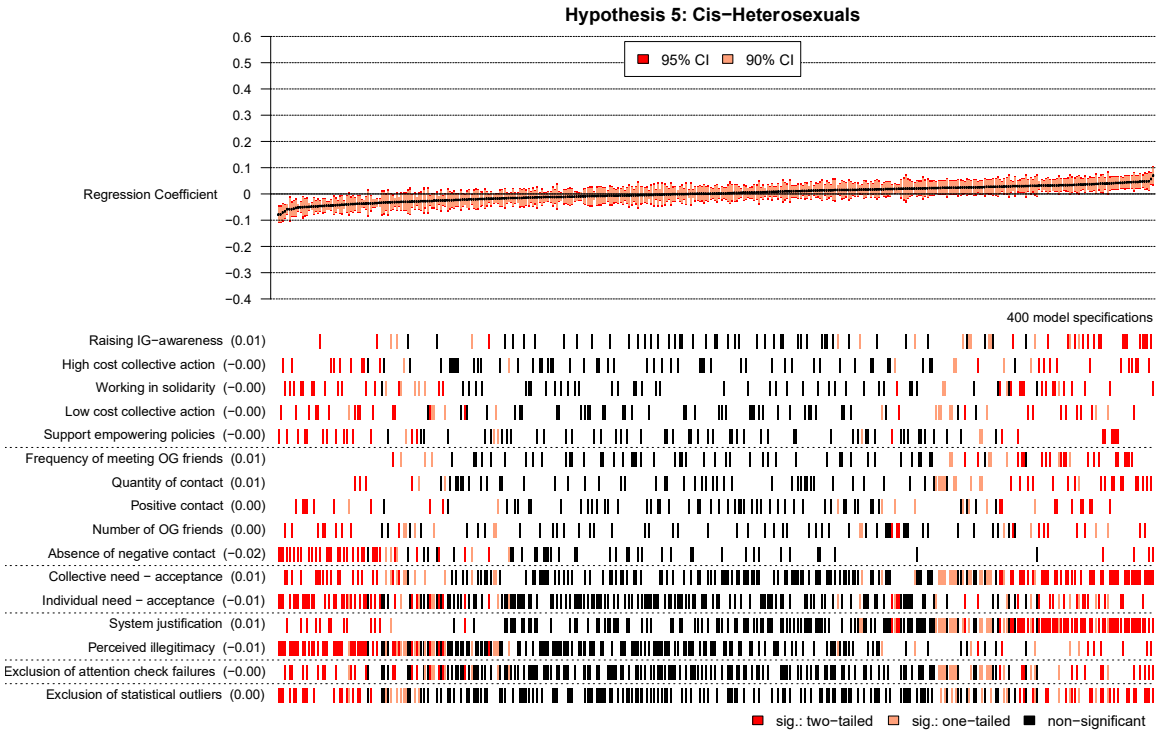


Figure S28D. Results of the specification-curve analysis showing the effect of perceived illegitimacy on the moderating effect of need satisfaction on the relationship between contact and social change among cis-heterosexuals (n = 4,203).

Deviations from the Preregistration

A complete list of deviations from the preregistration plan (https://osf.io/6hfcu/) is provided in Table S27.

Table S27
Summary of All Deviations

Preregistration	Publication: How does need satisfaction between advantaged and disadvantaged groups predict support for social change?	Comment
Planned data collection: June 2016 until 15th of April, 2017	*Final data collection:* June 2016 to 15th June, 2017	The data collection was extended to include participants recruited via PlanetRomeo (largest social network for gay, bisexual and transgender men). We expected to reach more participants from populations which are usually underrepresented in academic studies.
Planned sample: Participants from 18 ethnic majority samples, 10 ethnic minority samples, 18 sexual and gender minority samples, 18 cis-heterosexual samples.	*Final sample:* All subsamples with 100 usable participants from the four populations of interest (ethnic majority members, ethnic minority members, LGBTIQ+ individuals, cis-heterosexuals) were included.	Due to widespread dissemination of the link to the survey, individuals from additional countries participated in the survey. However, we did not include participants with double group-membership or implausible data (e.g., country = "Helicopter") at the population level.
Planned exclusion of participants: Everyone without outgroup contact.	*Final exclusion of participants:* Participants without outgroup contact and participants with more than 20% missingness on relevant items (intergroup contact, need satisfaction, perceived illegitimacy, and support for social change items).	To assure data quality, we excluded participants with more than 20% missingness on the relevant items.

Planned confirmatory factor analysis: Criterion: Use as many items as possible without reducing model fit below the following cutoff points as suggested by Hu and Bentler (1999): a CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of less than .08 as well as χ^2/df ratio of less than 3 indicates (Kline, 1998).	*Final confirmatory factor analysis:* Criterion: Use as many items as possible and keep scales consistent across groups without reducing model fit below the following cutoff points: CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. Exception: The measurement model for *intergroup contact* had a slightly too high RMSEA for ethnic majorities (0.067) and cis-heterosexuals (0.087). For *perceived illegitimacy,* the RMSEA slightly too high for ethnic minorities (0.062). Contact had a slightly too high RMSEA value (0.071) among cis-heterosexuals.	We never reached a χ^2/df ratio of less than 3. However, the χ^2 statistics has been criticized because it tends to inflate when there is a large sample size (Newsom, 2015). Thus, we referred to the CFI, RMSEA, and SRMR. Regarding cis-heterosexuals: We decided that not reaching the targeted RMSEA in one population is preferable to excluding further scales/items among cis-heterosexuals or all four populations.
Planned initial measurement model for contact: Two different measures of intergroup contact: 1) Contact quality 2) Contact quantity (4 items, i.e., frequency of contact with OG, number of acquaintances, relative number of friends, frequency of meeting with friends).	*Initial measurement model for contact:* Five different measures of intergroup contact: 1) Quantity of contact (not included among LGBTIQ+ individuals) 2) Positive contact 3) Absence of negative contact (negative contact, recoded) 4) Number of outgroup friends 5) Frequency of meeting outgroup friends	Experts on intergroup contact among our collaborators raised theoretical concerns regarding our planned operationalization of intergroup contact during our second project meeting (January, 2018). Hence, we deviated from the proposed starting point in the construction of the intergroup contact scales. The goal was to better represent the typical operationalizations used in the literature. We excluded scales assessing both quantity of contact and quantity of indirect outgroup friends among LGBTIQ+ individual because almost every LGBTIQ+ individual has

		more cis-heterosexual friends than 10 (i.e., the highest scale value) or LGBTIQ+ friends who have more than 10 cis-heterosexual friends.
Planned measure of need satisfaction: Two independent measures satisfaction of the empowerment and the acceptance need (each measured at the individual and the collective level)	*Final measure of need satisfaction:* Residualized versions of the need satisfaction variables (scale-level needs residualization, in each case controlling for the other need).	Since we observed strong correlations between the measures of satisfaction of empowerment and acceptance needs in all populations (see Table S24 for disadvantaged groups and Table S25 for advantaged groups), we decided to use residualized versions of the need satisfaction variables. This allowed a more accurate test of the effect of satisfaction of the group-specific need on support for social change.
Planned model underlying specification curve analysis: Multilevel model with random intercepts	*Final model underlying specification curve analysis:* We run regression model using item-level residualization – regressing the original items on the subsample identifier variable to obtain residualized item scores. This allowed us to separate out the between-sample variance (similarly to conducting random intercept multilevel modeling).	Residualizing the items instead of conducting multilevel modeling was done to guarantee the confidentiality and safety of the participants while increasing the transparency/reproducibility of reported analyses.

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